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The Story
OF THE
NEWFOUNDLAND
INDUSTRIAL DEVELOPMENT
BOARD

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Newfoundland. Industrial Development
Board

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The Newfoundland Industrial Development Board

AND ITS WORK

1942—1949

A record of the Activities of the Board Prepared by
H. J. RUSSELL, Director, and L. J. HARNUM, Secretary.

And Edited by

A. M. FRASER, M.A.,
Professor of History and Economics,
Memorial University of Newfoundland.

With a Foreword by

C. C. PRATT, O.B.E.


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FOREWORD

The Newfoundland Industrial Development Board is about to be dissolved after eight years of public service, but the results of its efforts will remain. The value of the tangible results may be appraised by a perusal of this book. While these results are considerable, it is not the intention of the Executive in authorizing this publication to present it simply as a chronicle of the Board's achievements, for these are a matter of record.

It is my belief that this effort by businessmen to co-operate in furthering industrial progress outside the range of their own particular businesses has also produced results of intangible but potential worth which should not be lost.

From these pages may be learned something of the basic factors involved in planning and development as applied elsewhere and as gathered from experience of the circumstances and conditions peculiar to our province and people. By the form of this presentation it will be seen that there is no attempt to construct a pattern of development, for perfection of pattern in such an effort is an illusion. It is hoped, however, that those who may inquiringly read this book will find enlightening information on local conditions and here and there a thought and idea which can be usefully applied to the better understanding and advancement of our industrial life.

It is anticipated that the survey reports and articles on the various industrial possibilities will have a practical value. These have been taken from the files of the Board and are herewith presented for public information.

In preparing these the officials were rightly interested more in factual presentation than in conclusions. Even where information may appear to show that the prospects of establishing a particular industry are not very bright, it was thought advisable to bring out the essential facts, for it must always be remembered that technological methods are constantly changing and what appears unfeasible one year may become practical the next. In the light of scientific development of industry, who can say what it may be possible to do with any commodity or form of service?

Throughout the records it will be seen that great stress was laid on the necessity for expert services in the conduct of surveys and for the establishment of promotional contacts abroad. As far as its means permitted, the Board pursued these objectives but could not completely cover the broad field that had been envisaged as necessary. It was unfortunate that representations to the Commission of Government for finance to conduct more extensive surveys of our resources and their use did not meet with sympathetic response.

This book tells the story of an earnest endeavour to assist in the establishment and enlargement of industrial opportunities in Newfoundland. The lack of emphasis on fishery development, it may be noted, is because that field was, by direction of the Commission of Government, to remain the particular function of the Newfoundland Fisheries Board. When the movement was inaugurated, one of the American industrial consultants approached by me remarked: "It requires a lot of courage to initiate this work now." First, the circumstances of the war, and then the unsettled local conditions of the post-war period, did impede the progress which had been hoped for. I trust, however, that the Board has left behind it practical benefits as well as evidence that the business community, through organized effort, was prepared to shoulder a

measure of responsibility with Government in assisting industrial revival.

Now that it is the policy of the Provincial Government, through the Department of Economic Development, to undertake the sole responsibility for this work, the Newfoundland Industrial Development Board passes from the scene. This new effort towards industrial improvement enjoys the full financial support of the Government and I am sure that I express the hope of all my colleagues that it will produce results of lasting benefit to Newfoundland.

This brief introduction would be incomplete without a tribute to the members of the permanent staff who have worked indefatigably to forward the objects of the Board.

The late Claude Fraser, inspired by the prospects of pioneering a new venture, relinquished the important post of Secretary for Natural Resources to become the first Director. Within a few months of assuming office, he was stricken with a fatal illness and was denied the privilege of pursuing the work which he had begun with great enthusiasm. His death deprived the Board of the valuable experience which he could have brought to his task.

Mr. L. J. Harnum succeeded Mr. Fraser in the capacity of Secretary and Acting Director.

At the termination of the war, Mr. H. J. Russell came to the Board as Director with a valuable background of engineering training and manufacturing experience and as a Squadron Leader in the Royal Canadian Air Force.

Both of these officials worked faithfully and well and their services are highly appreciated.

CALVERT C. PRATT.

MEMBERS OF THE NEWFOUNDLAND INDUSTRIAL DEVELOPMENT BOARD

J. W. Allan, O.B.E. (Manager, Furness, Withy & Co., Ltd.).....	1943-1950
J. B. Angel, (Managing-Director, United Nail & Foundry, Ltd.).....	1947-1950
C. B. Archibald, (Manager, Dominion Steel & Coal Corp., Ltd.).....	1942-1948
E. L. Baillie, (Manager, Imperial Oil, Ltd.)....	1948-1950
K. M. Brown, O.B.E., (President, Fishermen- Workers Union)	1942-1947
A. F. Buffett, (Director, G. & A. Buffett, Ltd.)	1942-1947
J. T. Cheeseman, (President, West Atlantic Products, Ltd.)	1947-1950
C. A. Crosbie, (Managing Director, Crosbie & Co., Ltd.).....	1942-1950
Chester Dawe, (Managing-Director, Chester Dawe, Ltd.)	1947-1950
G. S. Doyle, O.B.E., (Proprietor of Gerald S. Doyle, Ltd.)	1942-1950
R. J. Fahey, (Past President, Newfoundland Federation of Labour).....	1947-1950
W. J. Frampton, (Vice President, Newfound- land Federation of Labour).....	1945-1947
Justice C. J. Fox, K.C.....	1942-1946
P. Gruchy, C.B.E. (General Manager, Anglo- Newfoundland Development Co., Ltd.)....	1942-1950
H. M. S. Lewin, C.B.E., (Manager, Bowater's Newfoundland Pulp & Paper Mills, Ltd.)	1942-1943
H. R. Luscombe, (President, Brookfield Ice Cream, Ltd.)	1947-1950
F. A. F. Lush (Representing Newfoundland Federation of Labour).....	1942-1947

J. W. Morris, E.E., (Vice President, New- Newfoundland Light & Power Co., Ltd.)	1942-1950
C. Noonan, (Director, Harvey & Co., Ltd.).....	1943-1950
A. G. Ogilvie, (Manager, Royal Stores, Ltd., Grand Falls)	1942-1947
F. M. O'Leary, O.B.E., (Proprietor, F. M. O'Leary, Ltd.)	1942-1950
H. Oxford, (Representing Newfoundland Federation of Labour).....	1942-1945
G. Penney, B.Sc., (Mill Manager, Bowater's Newfoundland Pulp & Paper Mills).....	1943-1950
A. B. Perlin, (Associate Editor, The Daily News)	1942-1950
C. A. Pippy, (President, Newfoundland Tractor & Equipment Co., Ltd.).....	1942-1950
H. M. Powell, (Manager, Imperial Oil, Ltd.)....	1945-1948
C. C. Pratt, O.B.E., (President and Managing- Director Steers, Ltd.).....	1942-1950
H. J. Reader, (Manager, National Wholesalers, Ltd.)	1942-1947
W. A. Reid, (Director, Bowater's Newfoundland Pulp & Paper Mills, Ltd.).....	1947-1950
H. T. Renouf, (Secretary, Newfoundland Board of Trade)	1947-1950
A. T. Roblin, (Manager, Imperial Oil, Ltd.).....	1943-1945
H. A. Russell, (Director Job Bros. & Co., Ltd.)	1942-1945
James Stowe, (Representing Newfoundland Federation of Labour).....	1942-1943
W. L. Stuewe, (Manager, Dominion Steel & Coal Corporation, Ltd.).....	1948-1950
W. Templeman, O.B.E., Ph.D., (Director Government Laboratories)	1945-1950
F. Templeman, (Director, Vocational Training Institute)	1947-1950
G. G. Thomas, C.B.E., (Manager, Buchans Mining Co., Ltd.).....	1942-1950

EXECUTIVE MEMBERS OF THE N. I. D. B.

J. W. Allan, O.B.E.....	1946-1950
J. T. Cheeseman.....	1947-1950
G. S. Doyle, O.B.E.....	1942-1950
Justice C. J. Fox, K.C.....	1942-1945
H. R. Luscombe.....	1947-1948
J. W. Morris, E.E.....	1943-1950
C. Noonan.....	1943-1950
A. B. Perlin.....	1943-1950
C. A. Pippy.....	1942-1950
C. C. Pratt, O.B.E.....	1942-1950
W. A. Reid.....	1947-1950
A. T. Roblin.....	1943-1944
H. A. Russell.....	1942-1944
W. Templeman, O.B.E., Ph.D.....	1945-1950

EXECUTIVE OFFICERS

	President	1st Vice President	2nd Vice President	Treasurer	Director	Secretary
1942	C. C. Pratt	C. A. Pippy	Justice C. J. Fox	H. A. Russell	C. Fraser	
1943	C. C. Pratt	C. A. Pippy	Justice C. J. Fox	H. A. Russell	* C. Fraser	L. J. Harnum
1944	C. C. Pratt	C. A. Pippy	*Justice C. J. Fox	H. A. Russell	L. J. Harnum (acting)	
1945	C. C. Pratt	C. A. Pippy	G. S. Doyle		L. J. Harnum (acting)	
1946	C. C. Pratt	C. A. Pippy	G. S. Doyle		H. J. Russell	L. J. Harnum
1947	C. C. Pratt	C. A. Pippy	G. S. Doyle		H. J. Russell	L. J. Harnum
1948	C. C. Pratt	W. A. Reid	C. Noonan		H. J. Russell	L. J. Harnum
1949	C. C. Pratt	W. A. Reid	C. Noonan		H. J. Russell	L. J. Harnum
1950	C. C. Pratt	W. A. Reid	C. Noonan		H. J. Russell	L. J. Harnum

* Deceased



AN ACT TO INCORPORATE THE
NEWFOUNDLAND INDUSTRIAL
DEVELOPMENT BOARD

(20 January, 1942)

SECTION

- 1—Establishment and constitution of Newfoundland Industrial Development Board.
- 2—Objects of the Board.
- 3—Board prohibited from engaging in trade and making grants etc.
- 4—Membership of first Board.
- 5—Terms of office.
- 6—Appointments to fill vacancies.

SECTION

- 7—Office of the Board.
- 8—Director of the Board.
- 9—Employment of officers, etc.
- 10—Members to serve without remuneration save for certain expenses.
- 11—Bye-laws to regulate procedure.
- 12—Accounts, audit and report.
- 13—Revenue and Accounts.

**Be it enacted by the Governor, by and with the Advice
A.D. 1942 of the Commission of Government, as follows:**

Establishment
and constitution
of Newfoundland
Industrial
Development
Board.

1. There shall be a board of not less than ten nor more than twenty-five persons to be appointed by the Governor in Commission and to be known as the Newfoundland Industrial Development Board (hereinafter in this Act referred to as "the Board"), which shall be a body corporate by that name with power to sue and be sued and to purchase, take, hold and dispose of lands and other property for the sole purposes of and subject to this Act.

2. The objects for which the Board is established are:

Objects of
the Board

- (a) To provide a bureau of information on industrial, commercial and economic affairs which may provide data, or afford information on new methods of operation, industrial and commercial processes and products.
- (b) To assist and encourage industrial, commercial and economic developments and the creation of new and the expansion of existing industries in Newfoundland.
- (c) To create and foster, through co-ordination of industrial and commercial agencies, an effective means of co-operation in economic progress.
- (d) To receive from any sources, examine into and prepare reports upon any proposals designed to create or assist in the industrial and commercial development of Newfoundland.
- (e) To assist in providing contact between local enterprises and research institutions with a view to encouraging industrial and commercial research.
- (f) To collect, consider and analyse such data, statistics, or other information relative to or concerned with any industries and from any interests dealing with the production, preservation, transportation, processing and domestic and foreign consumption of the products of existing local industries or of any other industries which may be capable of being established in Newfoundland.
- (g) Generally, to take such other steps as the Board think necessary and expedient for properly carrying out the foregoing objects.

Board prohibited from engaging in trade and making grants, etc.

3. The Board shall not engage in trade or carry on any enterprise for profit, nor devote any of its funds to making a grant, advance or loan to any trade or industry.

Membership of first Board

4. (i) The Commissioner for Natural Resources shall be ex-officio a member of the Board and he shall be the channel for all communications of the Board with the Commission of Government.

(ii) In addition to the ex-officio member the first Board shall consist of members not exceeding twenty-five in number who shall be appointed by the Governor in Commission and whose names shall be published in the Newfoundland Gazette.

Terms of office

5. The first Board shall hold office until the 31st day of December, A.D. 1946; and the new Board which shall be appointed thereafter shall hold office for five years from the 1st day of January, A.D., 1947, and so on every fifth year thereafter: Provided that a member may resign his office by notice in writing to the Governor in Commission and the Governor in Commission may at pleasure remove any member of the Board.

Appointments to fill vacancies

6. Any addition to the Board to bring the membership of the Board to the total number of twenty-five may be made and any vacancy or vacancies in the Board caused by death or resignation, removal or otherwise may be filled by the Governor in Commission upon recommendation of the Board. Any new member added or appointed to fill a vacancy shall hold office for the remainder of the term of the then existing members. Members of the

Board whose terms have expired may be reappointed. No vacancy in the Board shall invalidate any of its proceedings authorized by a quorum at any meeting of the Board.

7. The Board shall have an office at which service of legal process and notices may be effected, which shall be situated in the city of St. John's.

Office of
the Board

8. (i) There shall be a Director of the Board whose appointment shall be made by the Board subject to the approval of the Governor in Commission and the said Director shall hold office on such terms and subject to such conditions as the Board may direct, and shall receive such salary to be paid out of the funds of the Board as the Board may direct.

Director of
the Board

(ii) The Director shall, subject to the direction of the Board, be its chief executive officer and be responsible generally for the conduct of the work of the Board and the management and supervision of its offices and employees.

9. The Board may employ such technical officers, clerks, servants or agents and may engage the services of skilled or professional persons as it may deem proper.

Employment of
officers, etc.

10. Members of the Board shall serve without remuneration: Provided however, that if any member of the Board is instructed by resolution to proceed to any place outside St. John's for the purpose of performing there any work for the Board it shall be lawful for the Board to defray his actual and reasonable out-of-town expenses whilst out of St. John's, including travelling expenses.

Members to
serve without
remuneration
save for certain
expenses

Bye-laws to
regulate
procedure

11. The Board may make such bye-laws, rules and regulations for its internal government as it may deem necessary and may alter and repeal the same from time to time, including but without restricting the generality of the foregoing the appointment of such officers and committees as it may deem necessary in the management and conduct of its affairs and for prescribing their duties and terms of offices and for the holding of meetings and for fixing the quorum for the transaction of business.

Accounts,
audit and
report

12. The Board shall keep full and complete books of account which shall be subject to audit by the Comptroller and Auditor General, and shall on or before the 30th day of September in each year make a report to the Commissioner for Natural Resources showing the work done during the year ended the 30th day of June preceding and such other data as may be of interest in connection with the work thereof. Accompanying and forming part of its annual report there shall be included a statement of its income and expenditure and a balance sheet of its assets and liabilities signed by the Director and a member of the Board, and certified by the Comptroller and Auditor General together with any report thereon which he may have made to the Board.

Revenues and
accounts

13. (i) The Revenue of the Board may consist of any grant, gift, bequest or donation: Provided that the grant to be made in any year by the Government of Newfoundland shall not exceed the sum of Twelve Thousand Five Hundred Dollars (\$12,500,000).

(ii) The income and property of the Board shall be applied solely for the purposes for

which the Board is constituted under this Act and in accordance with any bye-laws which may be made by the Board.

NEWFOUNDLAND INDUSTRIAL
DEVELOPMENT BOARD
BYE-LAWS

REGISTERED OFFICE

- (1) The Registered Office of the Board shall be situated in St. John's, Newfoundland, or at such place as the Executive may determine.
- (2) The Officers of the Board shall consist of a President and two Vice-Presidents to be elected at the Annual General Meeting of the Board in each year, who together with the Director and the Secretary-Treasurer to be appointed as hereinafter provided, and such number of members of the Board, not exceeding seven as may be elected at any General Meeting of the Board, shall constitute the Executive of the Board.
- (3) All officers and members of the Executive, with the exception of the Director and the Secretary-Treasurer shall retire from office at the Annual General Meeting in each year but shall be eligible for reelection. Any casual vacancy in the Executive may be filled up by the remaining members of the Executive.
- (4) Subject to the approval of the Government in Commission, the Board may appoint a Director and a Secretary-Treasurer, who shall hold office on such terms and subject to such conditions as the Board may direct and shall receive such salary to be paid out of the funds of the Board as the Board shall direct.
- (5) Subject to ratification by the Board, the affairs of the Board shall be managed by the Executive who may pay all expenses of the Board and may exercise such powers of the Board as are by the Act (No. 1 of 1942) incorporating the Board or by these Bye-laws, required to be exercised by the Board in general meeting, subject nevertheless to any regulations set out in these Bye-laws, to the provisions of that Act or to such regulations as

may be prescribed by the Board in general meeting shall invalidate any prior Act of the Executive, which would have been valid if such regulations had not been made. The continuing members of the Executive may act notwithstanding any vacancy in their body.

- (6) In case of the filling of any casual vacancy in the Executive as aforesaid, the person so appointed shall retain his office for the same period as a vacating member would have retained the same if no vacancy had occurred.
- (7)
 - (i) The Executive may meet for the despatch of business, adjourn and otherwise regulate their meetings as they think fit.
 - (ii) No business shall be transacted at any meeting of the Executive unless a quorum is present.
 - (iii) The quorum necessary for the transaction of business at any such meeting, shall be three members personally present at the commencement of such business.
 - (iv) Any question arising at any meeting of the Executive shall be decided by a majority of votes. In case of an equality of votes the Chairman shall have a second or casting vote.
 - (v) Any members of the Executive at any time may summon a meeting of the Executive.
 - (vi) The Executive shall elect their own Chairman and if no such Chairman is elected or if he is not present, the members present shall choose one of their number to be Chairman of the meeting.
 - (vii) A resolution signed by all the members of the Executive shall be as valid and effective as if it had been passed at a meeting of the Executive duly called and constituted.
- (8) The Board may appoint such sub-committees as it may deem desirable for the conduct of the business of the Board.
- (9) There shall be an Annual General Meeting of the Board to be held at such time not later than the 30th day of September in each year and at such place as the Executive may determine, for the consideration of the Report of the Executive for the preceding year ending June 30th, accounts and Balance Sheets, the election of officers and

such other business as the Executive may desire to bring before the meeting.

Special Meetings of the Board

- (10) There shall be a General Meeting of the Board to be held on the first Friday in each and every month except August, or at such other time as the Executive may determine.
- (11) The above mentioned general meetings shall be called ordinary meetings; all other general meetings shall be called extraordinary.
- (12) The Executive may, whenever they think fit, and they shall upon a requisition made in writing by any five or more members convene an extraordinary general meeting.
- (13) Any requisition made by the members shall express the object of the meeting proposed to be called, and shall be left at the Registered Office of the Board.
- (14) Upon receipt of such requisition, the Executive shall forthwith proceed to convene a general meeting; if they do not proceed to convene the same within twenty-one days from the date of the requisition, the requisitioners or any other five members, may themselves convene a meeting.
- (15)
 - (i) Ten days' notice at least, specifying the place, the day, and the hour of meeting and in case of special business, the general nature of such business, shall be given to the members in manner hereinafter mentioned, or in such other manner, if any, as may be prescribed by the Board in general meetings; but the non-receipt of such notice by any member shall not invalidate the proceedings at any general meeting.
 - (ii) No business shall be transacted at any meeting of the Board unless a quorum is present.
 - (iii) The quorum necessary for the transaction of business at any such meeting shall be seven members, personally present at the commencement of such business.
 - (iv) If within one hour from the time appointed for the meeting a quorum of members is not present, the meeting, if convened upon the requisition of the members, shall be dissolved; in any other case

it shall stand adjourned to the same day in the following week at the same time and place; and if at such adjourned meeting a quorum of members is not present, it shall be adjourned sine die.

- (v) The President or in his absence one of the Vice-Presidents, shall preside as chairman at every general meeting of the Board.
 - (vi) If there is no such chairman, or if at any meeting he is not present at the time of holding the same, the members present shall choose one of their number to be chairman of such meeting.
 - (vii) The chairman may, with the consent of the meeting adjourn any meeting from time to time and from place to place, but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place, unless notice of such special business shall have been given.
 - (viii) At any general meeting, unless a poll is demanded by at least five members, a declaration by the chairman that a resolution has been carried, or lost, as the case may be, and an entry to that effect in the book of proceedings of the Board shall be sufficient evidence of the fact, without proof of the number or proportion of the votes recorded in favour of or against such resolution.
 - (ix) If a poll is demanded in the manner described, the same shall be taken in such manner as the chairman directs, and the result of such poll shall be deemed to be the resolution of the Board in general meeting.
 - (x) Every member shall have one vote and no more.
- (16) The Board shall keep full and complete books of account, which shall be subject to audit by the Comptroller and Auditor General and shall on or before the 30th day of September in each year make a report to the Commissioner for Natural Resources, showing the work done during the year ended the 30th day of June preceding and such other data as may be of interest in connection with the work itself. Accompanying and forming part of this annual report there shall be included a statement of its income and expenditure and a balance sheet of its assets and liabilities, signed by the Director and a member of the Board, and certified by the Comptroller

and Auditor General together with any report thereon which he may have made to the Board.

Notices

- (17) A notice may be served by the Board upon any member either personally or by sending it through the post in a prepaid letter or by telegraph, addressed to such member at his place of residence.

Funds

- (18) All monies of the Board upon receipt shall be deposited in the name of the Board in some Chartered Bank doing business in Newfoundland, as may be determined by the Executive, and all monies of the Board shall be paid out by cheque duly signed by the Director and countersigned by the Treasurer, for the time being of the Board, or by some other member of the Executive.

Seal

- (19) The common seal of the Board shall not be affixed to any instrument except by the authority of a resolution of the Executive and in the presence of at least one of the officers of the Board and the Director, or such other person or persons as the Executive may appoint for that purpose, who shall sign every instrument to which the seal of the Board is so affixed in their presence.

Alteration of Bye-Laws

- (20) These Bye-laws, or any of them, may be repealed or amended or added to, at any general meeting of the Board with the consent of a majority of the members present at such meeting, of which notice has been given as hereinbefore provided, specifying the nature of such repeal, amendment or addition.

REPORT ON PLANNING FOR INDUSTRIAL DEVELOPMENT

The New Industries Committee was set up in 1940 by the Commission of Government under the acting chairmanship of Hon. J. H. Penson, Commissioner for Finance, and was the predecessor of the Newfoundland Industrial Development Board. It existed for a few months only and brought forth the idea of a permanent Board comprising representatives of industry and Government. The members from industry offered to contribute fifty percent of the operating budget and they continued this contribution throughout the life of the Board.

The constitution and policy of the organization were approved by the Commission of Government after the submission by C. C. Pratt to the New Industries Committee of a report which he had prepared on institutions and services in the United States and Canada with similar objectives. That report, based on personal contacts with the leading organizations in this field is reproduced here not only for the purpose of explaining more fully the origins of the Newfoundland Industrial Development Board but also to make available information and views in the established methods of approach to organized industrial development. The report follows:

May 31st, 1940

The New Industries Committee,
Hon. J. H. Penson, Commissioner for Finance,
Acting Chairman.

Dear Sir:

I should like to preface this report on my investigation on the possibility of establishing an Industrial Development Programme for this country by stating my con-

viction that a new and aggressive line of attack on our economic and social problems is urgently required.

This conviction is based on the following reasons:

- (a) Six months' service on the New Industries Committee has, I think, convinced all members of its inadequacy to do the work expected of it. With the limited time members can devote to this work the assistance they can render must be only advisory. The limits set upon their time prescribe very definitely the initiative which they can display.
- (b) I firmly believe that Newfoundland resources, if aggressively and scientifically exploited, are capable of keeping the population of the country in comparative comfort. In the fisheries alone we have immense untapped wealth awaiting enterprise and capital.
- (c) Science, as applying to industry in this country, except in the field of paper making, has had very little meaning for us. On the other hand, information on the results and methods of industrial scientific research the world over, and particularly in the United States and Canada, is available to us, free of cost, except for the expense of seeking it out. The time has come for us to make use of it.
- (d) It is my belief that industrial development must be made a matter of long range planning, and that the commercial and financial interests in this country should give a lead in the adoption of such a programme.
- (e) I consider that the approach to an effort, giving effect to these ideas and the adoption of a form of organization, should come after personal investigation by those engaged in similar enterprise in Canada and the United States. We should learn from their experiences, and seek their advice as to the method we should

adopt to solve our problems in this country, having in mind, of course, that no two communities or countries have identical problems.

- (f) Our social and economic ills can be remedied only by creating industry within the country, industry which will provide our people with remunerative employment. The basis of all improvement lies in a modern and wider economic structure which envisages increased and varied employment.
- (g) Finally, as critical as the past decade has been, we have far greater problems ahead, as the result of the present war. The absorption of demobilized forces into industry undoubtedly will be taken far more seriously than after the previous year. A greater sense of public responsibility will prevail than formerly. Now is the time to plan for measures of employment to relieve this problem of the future. Every man engaged in war work, whether in this country or overseas, thus lightening the present unemployment problem makes the postwar problem all the greater. It would be a tragedy if the immediate and temporary economic relief blinded us to what may be an overwhelming post-war misfortune.

The cogency of these reasons was such that it seemed to be a duty to bring the question to the attention of the Committee. Fortunately, as is usually the case, I found that several of my colleagues were of the same mind, particularly Mr. Perlin, who has been actively advocating a similar policy for some time. Arising out of discussions on the subject, Mr. Perlin and I were appointed to form a sub-committee to recommend a line of policy. From there on the rest is a matter of record in the minutes of the N.I.C., and the outcome was that I was asked to pursue the matter further. My terms of reference were in substance that I was to undertake an examination into the possibility of an economic survey with appropriate

institutions and a study of the methods used for the introduction and encouragement of industry through organized effort in the United States and Canada. Needless to say, it was a pleasure to me to render this further service.

The Secretary's letter referred to two institutions in the U. S. A., the New England Economic Council and the New York Economic Council, both of which had been considered as possible avenues of approach. The former is a very progressive organization. Its sphere is not designed to do for us the sort of work we have in mind. Nevertheless, the broad scope of its operations and its highly developed technique make an interesting study which would have useful and instructive lessons for us. The New York Economic Council is somewhat of a political organization but its executive officer, Col. Crosbie, who knows something of this country, having been associated with the International Grenfell Association, kindly gave his views as to points of contact.

This left me in the position of having to make personal approaches, as they occurred to me. Many and diverse fields were investigated by me. The particular objectives were to ascertain:—

- (1) The practicability, having in mind the experiences of other countries and communities, of a programme calling for active development and expansion in this country, along strictly industrial lines.
- (2) The procedure we should follow and the nature of the facilities which could be most profitably used.

It was obvious to me that our problems, while perhaps similar in character to those in many other countries, are different in detail and the approach to their solution would perforce be in new directions. Nevertheless, I felt that useful lessons could be learnt from the study of these fundamental features which are common to us and to those others. I found, without question, that

basically the conditions are such that we may safely .. adopt the same principles of planning for industrial development as used by other countries which have adopted this policy.

I shall now give you an account of channels through which my inquiries were made. At this stage, I shall only touch briefly on these, as I am appending a short account of each one.

My first interview was with Mr. T. H. Bartley, General Manager of the Toronto Industrial Commission (an industrial Engineer of wide experience). This organization was brought into existence for the purpose of attracting industries to that centre.

My next approach was to the New England Economic Council at Boston. I found Mr. Dudley Harmon, Executive Vice-President, very interested in discussing our problems, and he indicated his willingness to assist in any way he could. Mr. Harmon has had wide technical engineering experiences and has associated with him Mr. Hudson, an Industrial Engineer, and officials of training in various branches of industry and public service.

The National Industrial Conference Board, New York

This Board is probably unique in its constitution and field of endeavour in America. It is supported by the industry of the United States. They take a nation-wide view of industry. A few of their divisions may be cited as illustrating the scope of their work:

Division of Industrial Economics,

Division of Management Research,

Division of Information Service,

Division of Publications,

Committee on General Economic Studies,

Committee on Labour Studies,

Committee on National Studies,

Committee on Fiscal and Financial Studies.

This is a non-profit earning institution and the services which it renders on behalf of its members and associated organizations are done strictly on a cost basis. Its operations take it into foreign countries. I am indebted to Mr. Leonard Juvin, Director of Economic Research of this organization, for valuable introductions and other forms of assistance, as well as offer of direct services to which I shall refer later.

Col. Richard C. Patterson, Jr., Assistant Secretary of Commerce in the present Roosevelt Administration, but resigned in 1938 to take the Chairmanship of the Radio Keith Orpheum Corporation. Col. Patterson expressed keen interest in the subject of my inquiry and offered valuable suggestions, having had a wide experience in industry and finance in the United States.

Col. Brehon Somervell, Administrator of the Works Progress Administration, New York City. Col. Somervell is one of the best known public officials in New York, and is in charge of the W.P.A., which I may say, to indicate its size and responsibilities, has a monthly expenditure of ten million dollars. Col. Somervell is a United States army engineer, with wide industrial experiences. The late Walter D. Hines (former Assistant Chief Attorney of the United States, Director General of U. S. Railways in 1918-19, and arbitrator under the peace treaties of Rhine and Danube navigation for the League of Nations) and Col. Somervell were engaged by the Turkish Government to plan the industrialization of Turkey. This mission came into world prominence, and, while the work was proceeding, Mr. Hines was taken ill and died shortly after, his place being taken by his partner Mr. Goldthwaite H. Dorr, to whom reference will subsequently be made in this

report. Col. Somervell very kindly devoted considerable time to discussions of our problem and suggested my keeping in touch with him for such advice as he might be able to render as matters progressed.

Wallace Clarke & Co., New York. This is a company with world-wide ramifications. Mr. Clarke had been identified with Professor Kemmerer as industrial adviser on economic missions in Europe. This company maintained offices in various countries in Europe, specializing as consultants in management. They have made wide studies of phases of industrial life in many European countries, including reorganization of Government monopolies of Roumania, the motor and coal industries of France, the trade monopolies of Turkey, and assisted in the reorganization of the Polish industries following the world war of 1914-18.

Goldthwaite H. Dorr, of Hines, Rearick, Dorr & Hammond, a legal firm, 61 Broadway, New York. Mr. Goldthwaite H. Dorr is the Vice-President of the Dorr Company, who are consulting and research engineers in America with offices in many European countries. Mr. Dorr, himself, is an outstanding public man in America, having served on many industrial and social commissions of inquiry for the United States administration. He was Assistant Director of Munitions in the United States during the period.

John Blandford, Jr., Washington, Assistant Director of the Budget of the United States and formerly Managing Director Tennessee Valley Authority. Under Mr. Blandford's direction an extensive rehabilitation plan for the inhabitants in the distressed areas of the Tennessee Valley was put into effect.

H. K. Ferguson, Inc., Cleveland. This is an internationally known company with a wide experience in the Industrial and Engineering fields. Mr. Ferguson, the

President, displayed a warm interest in the problems of Newfoundland and was helpful in widening my avenues of investigation. He offered the services of his company in the matter of inquiry into the possibility of establishment of industry.

I am indebted to many others for valuable assistance and advice and would mention, particularly, Mr. B. Sonnenberg of New York, who conducts an industrial public relations service on behalf of many of the large industries of America, Mr. Floyd S. Chalmers, Editor of the *Financial Post*, Toronto, and Mr. F. C. C. Lynch, Chief of the Bureau of Geology and Topography, Ottawa. Mr. Lynch was formerly Director of the National Development Bureau of the Department of the Interior of Canada.

The foregoing are set forth particularly because of evidence of helpful interest received and also to illustrate the channels through which my investigations proceeded.

I feel, that in consulting the above and securing their active interest in the discussions of our problems (in some cases several interviews with the same parties were involved), I have tapped a wide cross-section of practical experience in the United States and Canada.

I have selected the above as the best practical examples of outstanding importance, most of whom have had experience directly in line with our own problems. I have had access to other institutions and offers of introductions to departments of Universities, Research Institutes and Foundations, of which I shall be glad to give a verbal report. I have discussed the possibilities of using such, but for various reasons, chiefly because of the academic nature of some and the specialized fields of others, I could not satisfy myself that anything more than helpful opinion could be obtained.

Backed by the opinions of these very competent and experienced men to whom I have presented an outline of

our problem, I feel that there is solid ground for the contentions put forward here.

(1) Industrial development of proportions commensurate with our needs can only come about by planning a long range flexible programme. Such a programme must be evolved by careful and painstaking study of our resources, services and facilities.

(2) A permanent organization set up for the sole purpose of industrial development is required. The development sought must be of the widest scope, and embrace every possible field of enterprise, including the use of all products of the sea and land. The personnel of such an organization should include a technical engineer who has had wide experience in the industrial field. This official will be the mainspring of the movement in its initial stages, at least, but to give continuity and local experience to the undertaking, a local manager or secretary must be secured. These with stenographic help seem to be all that is required at the moment unless development warrants extension of the organization.

(3) *An American affiliation* in connection with our development programme is highly desirable for the following reasons:

The United States more than any other country has surplus funds for capital investment. American investment in Canada has been the biggest single factor in Canadian development. In 1914 United States investment in Canada amounted to 750 million dollars. In 1930 it reached a total of 4,300 million dollars. Since then, American capital, by reason of intensive efforts on Canada's part to secure it—has continued to flow into the Dominion. In recent years new gold production, American travel in Canada and favourable trade balances with the world have, in the main, counter-balanced this. Surely if Canada with its developed re-

sources looks across the border for industrial impetus, we, in geographical proximity, should look in the same direction. Organizations to develop business in communities of Canada, such as I envisage for Newfoundland, devote considerable attention to bringing American capital across the border.

Newfoundland is perhaps less known in the United States, if we except possibly the New England States, than any country from the Arctic to Cape Horn. For one who has frequently travelled to the United States for many years, the lack of intimate knowledge of this country seen in every direction always leaves a deep impression.

(4) *Industrial Research Is Essential.* I was struck with the constant emphasis laid on the necessity of our keeping abreast of the times in the matter of industrial research. At the same time, no formidable programme of original research in this country was suggested. In the application of science to industry countless millions of dollars have been expended in the United States by Governments, and public and quasi public Research Bureaus of one kind and another. Their findings are all available to us without more cost than would be involved in the search for available data. It is a fact that the trend is to place the burden of Research directly on the Governments and public institutions and less responsibility is being taken directly by Industry in this respect. I say this notwithstanding that the research quest for new products and new processes cost American Industry alone in 1939 an estimated \$215,000,000. The result of laboratory research is constantly changing industry, setting up problems for some and creating opportunities for others. As an instance of our backwardness in this respect, it is enough to point out that scientific development has killed the former extensive salt fish trade of New England, and has practically eliminated that form

of cure for consumption in what we regard as modern countries, while we in our complacency have continued to think of the fishing industry chiefly in terms of salt codfish.

We should be impressed with the fact that Dr. Harold Thompson, who headed the only sustained effort we have made in fishery research, has said that within one days' steaming from our South Eastern Harbours, haddock supplies are available to produce an income equivalent to that at present obtained from cod. His views with regard to the variety and quantities of fish not being caught and thought by our people as valueless, are well known.

In the aggregate the value of the supplies of fish not fished for would amount to many times the value of the cod we now utilize. Newfoundland probably stands alone in regarding so many types of its available fish as of no value.

If one looks over the variety displayed at a fish counter in a store abroad one cannot but be impressed with the absence of Newfoundland products. The fact that there is not a single cannery or smoke house of consequence in the country is in itself enough to reveal the lack of modern business incentive for expansion. The variety of fish and fish products displayed in tin, glass, cellophane, etc., products of other countries, must always strike one as an indication of our failure to exploit the greatest potential wealth we have and develop new markets.

The same situation, but to a lesser extent perhaps, exists in respect to the utilization of our forests, except in the direction of newsprint and pulp. The use of cellulose, plywood, sulphite liquors in the manufacture of by-products from wood and wood waste, has only been considered within recent times.

I offer no apology for digressing in this way while writing under the heading of Industrial Research, as only

by whole time concentration on this problem by those with experience and the application of science to business in the interest of the industry as a whole can we make adequate progress. While making these remarks I am not in the least reflecting on the capabilities of existing departments of the Government and their usefulness in this country in so far as the conduct of their own enterprises are concerned. The fault lies in Government and private ownership failing to set up a joint organization of the kind referred to as existing in other places, to which both spheres of activity can look with confidence for guidance and technique in methods of scientific expansion of industry. I should point out that I consider a successful attack on our industrial problems by such an organization as I suggest would be impossible, unless with the full co-operation of all departments of Government, particularly those operating under the Commissioner for Natural Resources. The Chief Executive of one of the public industrial promotional organizations stated to me: "I never show a prospective investor, or an inquirer for information a Government Blue Book, or an official report. The moment I do that, I feel that I am shelving him. It is my business to find the means of assisting industry by using all available information from the public records, which I can place at his disposal."

(5). *Survey of Resources is of Utmost Importance.* The importance of a thorough survey of resources as a preliminary to an industrial programme was strongly emphasized. As one authority said, "It boils down to a simple issue. Find out what you have to use and then devise ways of using it." The simplicity of this is only in the statement. It was also emphasized that a survey, which ends with a filed report, even though put in libraries and trade organizations throughout the world, is worthless. A survey must go hand in hand with the formulation of a plan of development. The scope of the survey is in itself a matter for careful study. It can be confined to the col-

lection of all available facts for practical use or can partially or completely cover investigations over a very wide field. To illustrate, it may or may not include a survey of potential water power, mineral possibilities, and so forth. It will have to be synchronized with the efforts going on in many directions. Its primary purpose, however, of being helpful in the actual promotion of industrial undertakings must never be lost sight of. To illustrate further, the survey would take into consideration the possibilities of export trade under the Empire preference, competitive freight rates and transportation facilities, available markets and all phases of marketing, competitors' products and methods, measure of assistance required in initial development, etc., in short, all phases of production, transportation and marketing.

(6) *The Many Changing Phases of Industry Must Be Constantly Reviewed.* I am much impressed with the fact that one important phase of industrial planning by organizations is that of endeavouring to forecast the changes in industry and to be ready to meet such changes. An intelligent and continuing study of a trend enables industry to adapt itself to changes frequently to its own betterment. On the other hand, if these changes come without careful plans being made for meeting them, they lead to a widespread dislocation of industry and impoverished communities.

I was shown a report published by a New Products Committee of one of these trade promotion organizations, which shows how the centre of industries has been shifting from time to time, and gives the reasons. This may be illustrated in development of animal feeds, plastics, fabrics from milk, synthetic textiles of various forms, the replacement of wood, leather and cloth by paper, synthetic plastics replacing rubber, milk, cotton asbestos, etc.—new uses for glass, modern plywood with the strength of steel, and waste wood by a new process made into charcoal,

which is expected to lessen the dependence on coal in the steel industry. All of these changes mean the replacement of other products in industry. One could go on indefinitely citing such changes, not to mention the revolutionary changes in the preservation of foodstuffs. The keeping pace with the changes in industry through scientific development is entirely outside the field of endeavour of the average business man. It is a matter for organized business in close collaboration with Government, but the heartening point of it all is that there are very few scientific secrets today. As I have stated before, and notwithstanding the large share of research still maintained by industry, the trend is for the responsibility for industrial research to be accepted more by public organizations than by industry, and it only requires proper technical assistance in searching out the findings to be in a position to make use of them. What chance has a country that does not organize to swing in line with the bewildering results of science as applied to industry?

Newfoundland's Insular Position

It is usual for Newfoundlanders to regard our geographical position as a major difficulty in their efforts to promote industry for export. Truly that has been and still is a handicap, but it is well to realize that this difficulty is being lightened year by year with the trend towards more rapid and changing methods of transportation.

The long distance telephone and airmail will shortly follow the telegraph in breaking down the barrier to progress of slow communication with the outside world, and the advent of economical Diesel power and faster ocean transportation has reduced and will continue to reduce our insularity. Already that difficulty has been overcome to a greater extent than our people generally realize. Powered boats can now run our fresh lobsters and salmon, for instance, to the mainland with an ease that was not anticipated a few years ago. Refrigeration year by

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year is undergoing a revolutionary change, and is not the monopoly of wealthy companies any longer.

In this country we have to revise our ideas of our own possibilities and apply ourselves with faith and energy to modern development, which I am convinced is already within our reach.

Prosperity for Newfoundland is dependent upon the extension and prosperity of its industries, particularly the industries built upon export trade.

We cannot wait for world conditions to adjust themselves, so as to provide the ideal period for embarking upon a plan of progress. Difficulties will always exist, but without venturing to anticipate the changes which will follow the great upheaval of the war, we can see the trend today, in the United States at least, of a distinct modification of tariff barriers and an awakening to the fact that a country which would be a seller in the world's markets must also be a buyer.

Available Services

For your consideration, I shall present separately a detailed and confidential statement of interviews with the persons and organizations mentioned in this report, and I have indicated also the possibility of availing of the services of some of them. I shall state my definite recommendation in this connection in due course. While I feel strongly that we should proceed along very aggressive lines and undertake whatever reasonable expenses are required, still, I have been unable to obtain a statement of possible cost. This will be impossible to obtain until a policy is, at least, tentatively agreed upon.

Experience of Others in Industrial Planning

Under this heading is submitted information I have gathered of the ideas, methods and progress of others, who have applied themselves to the problems of organized

industrial planning. In presenting this, I hope it will stimulate our own thoughts in this direction.

THE TORONTO INDUSTRIAL COMMISSION makes an interesting study. It was formed in 1929 by leading industrialists and business men of Toronto. The expenses of operation are borne half by the city of Toronto and half by the business interests, such as Power Companies, Railways, Manufacturers, Distributors, etc., in the Toronto area.

The management is entirely under the direction of business interests through a Committee of fourteen. The Mayor of Toronto, alone, represents the City. Business interests, by reason of the limited geographical sphere of activity, are able to see a direct result accruing to them from their investment. Within a radius of 100 miles of Toronto is concentrated one third of the total buying power of Canada's National market. The General Manager is an industrial research engineer of wide experience.

The operations of the Commission are separate and apart from Chambers of Commerce and Boards of Trade and inquiring parties are assured of confidential discussions of their problems.

The management keeps a close contact with financial and business interests in the United States and personal visits to that country are as frequent as once a month. The organization surveys the possibilities of industrial undertakings and places its services and advice at the disposal of concerns seeking investment opportunities within the area. Data are collected on each specific type of industry and presented to interested parties in original form.

The Departments of Government and public agencies afford an immense amount of assistance to them, but the organization takes a personal interest in each prospect, gathers all the pertinent facts available, and makes up the brief to meet the individual need.

The Commission maintains economic research and industrial engineering facilities and co-operates in developing manufacturing plans. It has been especially active in assisting the promotion of industries specializing in export trade under the advantages of British Empire preference and Canada's trade treaties. American and other foreign capital looking for opportunities of investment receive their particular attention. In 1939 alone it co-operated in the establishment of 14 manufacturing developments and assisted many other manufacturers in expanding their operations. It maintains wide foreign contacts by direct mail advertising and publishes a monthly Industrial News Bulletin of interest to American and British manufacturers. It participates in arrangements for National Exhibitions. Since its inception in 1929, it has co-operated with and given assistance to the establishment of 146 industrial firms and advised on 30 other manufacturing arrangements. The 1939 payroll of those industries was over five million dollars and the value of materials purchased in that year was eleven million five hundred thousand dollars. Direct employment was given to 5434 persons by these New Industries, and it is estimated that indirect new employment was provided for over 5,000 additional persons. Correspondence was carried on with 400 U. S. and British companies, answering inquiries for specific data, analyzing particular problems and making technical surveys. Owing to the Toronto area being highly industrialized, an immense amount of free technical assistance is obtained from its member companies and this reduces very greatly the expenses of the Commission's operation.

THE NEW ENGLAND ECONOMIC COUNCIL is an organization of outstanding merit and usefulness in the United States. It is financed by 1800 New England concerns and is directed by 82 leading citizens. The organization has contributed materially to an industrial rebirth of the New England States. New England, being one of the oldest industrialized centres of America, felt the full

impact of the competition arising from the widespread industrial progress of the United States. For a period what was termed an "industrial dryrot" had set in. As it was traditionally entrenched in textiles and shoe manufacturing, the newer parts of America cut wide swaths in its markets. The story of how New England "came back" and weathered the depression better than any other section of the United States is a fascinating one. It took full cognizance of the results of industrial research throughout the country, learned how to turn from outmoded products and methods to a modernization of industry and now can boast of the greatest diversification of industry in the Union.

The New England Council had been an effective leader in this movement. The result of fourteen years of intensive effort by this organization has been phenomenal, and an independent observer wrote recently: "the New England Council has been the dynamo that has powered the Yankee awakening." The key-note of its campaign has been "New products and new methods." Success has been largely through gearing its industrial machinery to the research laboratories of America.

When inaugurating the planned development of New England's industries some years ago a prominent financial leader in the movement said: "In material things, New England is wholly sound; her troubles arise mainly from her mental attitude and lack of vision." The results achieved showed him to be wholly true and one wonders whether these words may not be applied to Newfoundland today with equal effect. The Council has but one purpose—the promotion of New England's economic welfare. It focuses the far reaching aspects of its work on the sole objective of more profitable income through industry, agriculture and recreational development. The organization functions through a specialized staff, whose work is supervised by general officers of the Council and by

Committees of Directors. The Governor of each state is a member ex-officio of the Council.

Results of The Border Cities Reports

An instance of the result of planned industrial development, following a comprehensive survey, which was drawn to my attention, might be cited.

In 1927 the Border Cities, that is Windsor, Ontario, Walkerville and adjacent places conducted a comprehensive survey to discover what industries had commercial possibilities. The survey covered every major factor which directly affected the community's industrial progress and prospects. It embraced the consolidation of complete information of the Natural Resources of the tributary district; sources of supply of raw materials, the character of the manufactured products of the existing industries; the accessible markets, the situation in regard to fuel and power; the availability of different kinds of labour; transportation facilities; housing conditions and costs of living; the availability of industrial sites, taxation and assessments conditions; educational facilities; water supply and many other factors of interest to the prospective manufacturers or other commercial organizations. Emphasis was placed upon the systematic assembly of the opinion and suggestions of manufacturers, merchants and other business men as to how industrial advantages and development of the community might be furthered. The result was that in the three years following 50 industries were either established or expanded and a number of others were under consideration, all of which were in keeping with the suggestions and recommendations embodied in the report. In 1930 the number of monthly employees in industries other than the automotive industry, showed an increase of upwards of 4,000 over the number engaged in 1927, when the survey had been made and when an organized effort to attract new industry was undertaken.

A report of the Managing-Secretary of the Border Chamber of Commerce, Windsor, Ontario, to the Minister of the Interior had the following statement:

"The Industrial survey changed the whole course of the Chamber's activities. Previous to the survey, we had not sufficient facts to outline and prosecute efficiently a programme of industrial expansion. The facts and recommendations presented placed us in a position so that now we have an efficient basis of operation."

The benefits which accrued to the Border Cities awakened a nationwide interest and in Western Canada, particularly. Similar efforts were undertaken in Victoria, New Westminster,, Vancouver, Calgary, Regina, Saskatoon, Port Arthur and Fort William, as well as in other parts of the Dominion. In Vancouver alone, as the result of the survey, nineteen types of industries were brought to light as having distinct possibilities.

While an industrialized area, such as the Border Cities, might be thought to have, and quite likely had, unusual possibilities in this direction, still the lesson must have particular interest to us, when we feel we have raw materials of wide variety in the fisheries and other fields not being developed.

Many such instances of the value of intensive and organized effort to promote industry may be gathered from all parts of the American Continent, but the above serves as a good illustration of what can be accomplished.

It cannot be too strongly emphasized, however, that a survey only lays the basis for achievement and will be practically valueless if it simply ends in a report. The value comes only by a concentrated effort to use the facts of a survey for the purpose of influencing the establishment of industry and that is a matter which requires experience and skill extending over the course of years.

Tennessee Valley Authority

The United States Government undertook a tremendous project in the Tennessee Valley involving an expenditure of over a quarter billion dollars. This undertaking is well known, as it has been one of the most publicized Government works in the United States. The area affected is about 40,000 square miles, with a population of two million people.

The immediate object was the rehabilitation of the people, who, chiefly by reason of floods and soil erosion, had fallen into a condition of distress. The average cash income per family in many parts of the area was less than \$100.00 per year.

Water control and power development was designed to lay the basis for a regional plan of rehabilitation. I am indebted to Mr. John D. Blandford, Junior, who was the Managing Director of the project, and is now Assistant Director of the Bureau of the Budget of the United States, for information with regard to this undertaking and for his views on our own particular problem. The latter were helpful in the formation of my case for an effort towards industrial development in this country.

The T. V. A. had a multiplicity of functions embracing the fields of water control, power development and utilization, fertilizer, afforestation, soil erosion control, land planning and housing, social and economic research. It was essentially a planning agency, which was given the power of putting its own programme into execution.

The Committee in charge presented these views in their report to the Government of the United States, which I quote:

"Planning is essential to orderly, progressive development and cannot be neglected without serious consequences. Planning of itself is not enough. Plans which are

unexecuted and forgotten all too frequently appear, and regardless of merit, contribute little to progress. Hence the distinction between "Planning" and "Development." Development is conceived as a dual process, growing out of the effective execution of intelligent plans."

In the Valley the production tonnage had been 80% mineral, 10% agricultural, 3% forests, 7% manufactured products.

The Muscle Shoals Plant was erected as a pilot plant to demonstrate the practicability of producing fertilizer through the use of electricity. Cheap electricity is the key to the Cyanimide process of producing both nitrogen and phosphoric fertilizer.

The T. V. A. operates on a five year programme and budgets for one year's operation at a time. Budgetary estimates constituted the most effective form of integrated planning.

Industrial research carried on resulted in the development of new industries, products and manufactured processes. A few of which may be named: Ceramics; Potato Starch manufacturing; Electro-chemical industries; Meat Processing; Seed Potatoes; Fruit and Vegetable preservation; Improved methods of refrigeration; Soil heating; Dairying projects; Cotton seed oil products.

A study of the results of this scientific research, on which one million dollars was spent, should have some interesting lessons for us.

Pacific North West (U. S. A.)

The circumstances in this area are different from those of New England which is reviewed elsewhere in this report. The Northwestern corner of the nation is a less highly developed area and difficulties arose mainly from the relative youth of the territory. Nature had generously endowed it with wealth of forests, fisheries, potential

water power, wheat lands, fruits, minerals, ports and numerous other resources. The population is comparatively small and sparse.

A National Planning Board was established to include the States of Washington, Oregon, Idaho and Montana. The idea of large scale planning originated in the minds of individuals who were residents of that section of the country. The concept arose spontaneously, and the organizations were built up locally. While receiving Federal assistance on a large scale, the projects undertaken represent a direct response in the region itself to the need for its own planning, rather than enterprises conceived primarily as instruments of the Federal Government.

In 1933 the Pacific North West began the development of a "plan for planning." It consisted of an inventory of the whole region. The Planning Commission undertook a general analysis of available material pertaining to the problem of the area. The process of taking stock enabled the Regional Commission to define the problem towards the solution of which its planning should be directed. It grouped problems under 12 topics: Basic data, land resources, mineral resources, water resources, power, transportation industry and commerce, public works and improvements, public welfare, education, government and legislation.

The Commission has concentrated more particularly on Land and water resources; Water power, Minerals; Forests; Recreation; Industrial development.

The above is cited simply as a further indication of popular thought in regard to the need for planning for industrial development.

THE NATIONAL RESOURCES BOARD OF U. S. A., consisting mainly of members of the U.S. Cabinet, presented in 1934 a report to the President on National

Planning for the use of the Resources of the United States.

The Government has created a National Planning Board, and suggested to the Governors of the 48 States, the adoption of State planning work and offered Federal assistance of Consultants.

The report stated that it had hoped that at least ten States would set up planning Boards and that four or five might show good results. Instead of the anticipated ten States responding, forty-two of them seized the idea and set about to develop their State economy by organized effort and a scientifically planned programme.

The State Planning Boards generally allied themselves to business interests and in the main took their leadership from industry itself, as in the case of the New England States, which permitted their activities to be largely directed through the New England Council. In States such as Montana, Kansas and Texas, the State Chambers of Commerce were the chief directing factors; in others universities and colleges took a leading part.

The report of the National Resources Board in stating the need for Government Economic planning said: "There is need for Government Economic Planning, not to replace business planning, but to render services to the general public and to business itself, which business cannot render."

To quote further: "Planning is not an end, but a means, a means for the use or better use of what we have. Planning must not involve a regimentation of private life. Sound planning should bring a fresh release of opportunities and assist individual initiative. Anticipation of the future is the key to adequate planning for the best use of our National Resources.

*Excerpts From A Report of The National
Industrial Bureau of Canada*

"The function of the Bureau was to assist industry in giving advice about latest inventions and processes in other countries, recognizing that the Government, through its Departments, should not shoulder the responsibilities for promoting the development of industry.

"The whole effort to expand and strengthen Canadian industry can and does benefit much more from the active and well organized work of public organization of business origin and maintenance. In this way, the work can be more effective than by the expensive and top heavy Government organization.

"A matter of utmost importance is the measure of mutual assistance and co-operation between Government Departments and organizations set up by business for the express purpose of promoting industrial development and welfare of communities.

"It is frankly recognized that the greatest force for promoting industrial growth in Canada or any other country depends fundamentally upon the initiative and enterprise of business men."

"Perhaps the most important single step that any community can take with a view to securing steady and solid industrial growth is to lend every effort towards organizing and maintaining a live local body, which commands the sustained support and interest of every business man in the community. One essential service that such a body can perform is that of making an adequate local industrial survey.

"It is safe to say that in practically every case, a broad and thorough industrial survey is essential to furnish an adequate basis and starting point for any

systematic and intelligent effort to find sound openings for new industries.

Industrial Survey—What it is.

“An ‘Industrial Survey’ may be broadly defined as an industrial stocktaking of a country or community. The aim should be to secure a complete bird’s eye view of the community from every angle which directly or indirectly affects industrial growth. A strong industrial Committee is required to give direction and leadership and to afford to all the benefits of collective experiences.

“The real object of industrial surveys is to furnish a first class basis and starting point for systematic investigation. Later studies with respect to possible new industries require steady and persistent work, often extending over a period of years before concrete results are achieved.

“There is no question that this work systematically pursued with a view to examining thoroughly the industrial use of every natural product and raw material, will steadily produce valuable practical results in extending and diversifying the country’s industrial development.”

Hon. J. H. Penson, Commissioner for Finance, in his budget speech of July 3rd, 1939, made this statement, which I am sure met with unanimous approval:—
“Modernization must be the keynote of developments here. By better methods a better standard of production can be attained, resulting in a higher degree of remuneration, which is our greatest need. In particular this is the case with the fishing industry. Improvements in methods and greater specialization are needed.”

As I have already pointed out, we have one and only one large scale manufacturing industry of importance, operated on scientific lines, namely, the paper industry.

The unbalanced nature of our economy is well demonstrated by the percentage of our population engaged

in the unremunerative fishing industry, as at present carried on.

The export value of the products of the fisheries for the year ending June 30, 1939 was \$7,439,026. The total export value of all local products for that year was \$31,376,144.

The census of 1935 placed the number of males engaged at the fisheries at 36,511. Those engaged in all occupations, including the fisheries, totalled 78,276. By these figures we see that 46.7 percent of the wage earners of the country shared in the export value to the extent of only 23.7 percent.

While recognizing the fact that a larger proportion of the export value of the fisheries goes directly to the producer than is the case in the other industries, still the unbalanced position reveals the heart of the problem in the economy of our country.

Emphasis on this point is given by the figures of the 1935 census, which places the average earnings of the fishermen at only \$135.82.

We can only solve this problem by an extension and diversification of industries created by the investment of capital.

It is true, as Hon. Mr. Penson also pointed out in the budget speech to which reference has been made, that an increase in our export trade must be accompanied by an effort to provide a larger share of the needs of the country at home. Nevertheless, what our farmers and local producers in every sphere lack is the local market for their products which only industrialized communities can provide.

Recommendations

I have already intimated the general policy which I

think we should pursue in this country, but to summarize the same, I now present the following recommendations:

- (1) That the Government be asked to adopt in principle the policy of a comprehensive survey of our industrial potentialities and provide a financial contribution as well as a measure of other assistance for a definite plan of development in full co-operation with and under immediate direction and control of the business and financial interests of the country.
- (2) That this committee consider ways and means of promoting an industrial development organization composed of representatives of business and financial interests, who will undertake a measure of financial responsibility in the matter.
- (3) That the approach to the solution of our problems shall be in line with the methods adopted successfully in other countries as indicated in this report, which entail setting up of a permanent organization under proper technical management.
- (4) That a definite commitment of financial support by the Government and business interests shall be for a period of not less than five years.
- (5) That the offer of one of the companies mentioned herein to send an official to make a preliminary study on the spot of the extent of the required survey, and, the possibilities of setting up, over the course of time, a definite plan for industrial development, in line with the needs of our country, be availed of.

I should like to mention that I discussed the matter under review with financial interests in Canada, which have operations in Newfoundland and found a favourable response to the general principles of these proposals.

In conclusion I must emphasize that I have set forth these views and proposed these recommendations, not with

any expectation of finding an easy or quick way out of our difficulties. I have rather been concerned with trying to find a basis on which sure and steady progress might be made for only in that way can we look for permanent improvement.

Yours very truly,

C. C. PRATT.

THE STORY OF THE BOARD

*Compiled From The Annual Reports of the Director and
Secretary to the Board*

By A. M. FRASER, M.A.,

Professor of History and Economics,
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This is the story of the Newfoundland Industrial Development Board, a voluntary and non-profit organization of representative and public-spirited Newfoundlanders which was formed to foster the economic growth of the Island and to seek new avenues of employment for its people.

The Board, as such, did not come into existence until July 1, 1942, but its origin can be traced back to its precursor, the New Industries Committee, which was set up in 1939. This Committee, like the Board, was a voluntary association of business and professional men inspired by a determination to study and grapple with the economic problems that confronted Newfoundland.

The New Industries Committee was born in the midst of the grim depression which engulfed Newfoundland in the 'thirties' and inflicted harsh unforgettable misery upon many thousands of Newfoundland families. In a sense, the Committee was the response of the Newfoundland business community to the challenge of the depression.

The Committee worked hard but it was handicapped by the lack of a permanent staff. In these circumstances it was little more than a study-group. It could and did

create ideas many of them very sound and constructive, but it had no organization to give effect to them.

Accordingly, the Committee soon reached the conclusion that a permanent organization was essential to continuous and successful effort. However, before setting up an organization of this kind, the Committee very wisely decided to consult expert opinion as to the form which the projected organization should take.

Mr. C. C. Pratt, O.B.E., a member of the Committee, visited the United States and Canada for the express purpose of seeking the advice of qualified industrial counsellors. He had interviews with the heads of the leading industrial organizations in both these countries. Mr. Pratt's extremely clear and concise account of these interviews may be read in his letter to the then Commissioner of Finance. Mr. Pratt's letter is reproduced in this volume because of its great intrinsic interest and also because of the illuminating light which it sheds on the origins of the Industrial Development Board.

On his return to Newfoundland, Mr. Pratt reported back to the Committee, and it was decided to engage the services of two eminent American industrial scientists, Mr. G. H. Dorr and Mr. J. V. N. Dorr, to come to Newfoundland and advise the Committee on the type of organization best suited to Newfoundland's conditions.

On the basis of the recommendations of the Dorr Report, the Committee decided to approach the Government with the request that it enact legislation incorporating a Board to be known as the Newfoundland Industrial Development Board. The Board would, in the first instance, be set up for a period of five years. It would be financed jointly by Government and by voluntary subscriptions from business firms. The Government would be represented on the Board by the Commissioner for Natural Resources. The Board would engage the services of a permanent Director.

In 1942, thanks largely to the efforts of Hon. Mr. Dunn, the newly appointed Commissioner for Natural Resources, the Government approved these proposals. A budget of \$25,000 a year for five years was tentatively agreed upon, half of which was to be provided by the Government and the other half by the business community. The Government also consented to release Mr. Claude Fraser, Secretary of Natural Resources, and he was appointed permanent Director of the Board.

The Act of Incorporation was passed by the Government on January 20, 1942, and the Board was officially established with an initial membership of twenty, including the Commissioner for Natural Resources as a member ex-officio.

Mr. C. C. Pratt was unanimously elected President of the Board, an office to which he was annually re-elected throughout the entire period of the Board's existence. His repeated election to this high office was a just recognition of his invaluable services to the Board. He was chiefly responsible for its establishment in the first place, and, throughout his tenure, he gave unstintingly of his time and great organizing ability to the cause which he had so much at heart. His annual addresses on the work of the Board to the St. John's Rotary Club and other organizations did much to arouse public interest in, and support of, the Board's activities. These addresses are reproduced in this volume. They have a permanent value not only because they form an admirable account of the policy and achievements of the Board, but also—and more important—because they provide a searching analysis of Newfoundland's economic problems during a critical phase of her history.

Under Mr. Pratt's vigorous leadership the Board lost no time in pursuing the aims and objects for which it had been founded. These aims and objects are set forth in the Act of Incorporation which appears in this volume.

The policy of the Board was defined in 1942 as follows: "Generally to assist in developing the utilization of such facilities as are available for wartime production, and, at the same time, to initiate investigations with a view to a compilation as early as possible, of information respecting the expansion of existing industries and the creation of new ones."

The pursuit of these objectives necessarily involved an expert examination of the uses to which Newfoundland's resources and facilities could be put, and the preparation of a survey of all available information regarding possible lines of industrial development.

By 1942, wartime prosperity had come to Newfoundland. Unemployment was no longer an immediate problem. The winning of the war was all-important. The Board therefore decided to concentrate on two main objectives. The first of these was to devise ways and means whereby Newfoundland could establish industries which would make a direct contribution to the Allied War Effort.

The Board accordingly arranged for a thorough study to be made of the possibility of Newfoundland participating in the Canadian wartime "bits and pieces" programme. Under the auspices of the Board, Mr. F. A. Allen and Mr. E. W. Harvey of the Canadian Pulp and Paper Wartime Production Board conducted a survey of the industrial plants at Grand Falls and Corner Brook, and of the machine shop and foundry facilities in St. John's. The facilities at Corner Brook and Grand Falls were also investigated by two qualified officers of the Royal Canadian Navy.

Unfortunately, the Board's efforts proved unavailing. There were two chief reasons for this disappointing result. In the first place, the demand for the products of the "bits and pieces" programme was already being fully met by

the plants already in operation in Canada. In the second place, the authorities in charge of the programme considered that it was too late in the progress of the war to launch new enterprises of that nature in Newfoundland. For example, a proposal to use yellow birch as plywood in the construction of military aircraft was rejected by the Ministry of Supply in the United Kingdom. Consequently, the attempt to establish wartime industries in Newfoundland had perforce to be abandoned.

However, the survey was not entirely fruitless. It revealed that facilities did exist on the West Coast of Newfoundland for naval repair work. The Board immediately acted on this information, and succeeded in obtaining a contract for this important work by a West Coast firm, one of Newfoundland's largest corporations. The work began at Corner Brook in May, 1943, and continued until the end of the War. By then, naval repair work to the value of over a quarter of a million dollars had been performed there. The great advantage of this development was that it relieved the pressure of naval repair work on the congested machine shops in St. John's.

The Board made a further valuable contribution to the war effort by rendering assistance in certain aspects of the very successful programme of wooden ship-building undertaken in Newfoundland for the Admiralty.

The second principal objective of the Board in 1942 was to lay long range plans for industrial development which would provide post-war employment after the wartime boom had subsided and when thousands of young Newfoundlanders would be returning from the armed services eager to re-establish themselves in civilian life. The Board therefore gladly availed itself of the Government's invitation to nominate representatives to serve on the Post-War Rehabilitation Committee. At the same time, the Board directed much of its own effort to the

examination of industrial possibilities which would open up new avenues of employment.

During 1943, the Board laid the foundations of two new industries. It was through the instrumentality of the Board that plans were completed for the establishment of a creosote plant and a factory for the manufacture of "Dunbrik". The former has conferred a four-fold benefit upon Newfoundland. In the first place, it has obviated the necessity for further importations of creosoted woods of the types and sizes which are available locally. Secondly, it has greatly extended the life of railway ties, telephone poles, etc. In the third place, it has made possible the more general use of native birch which can now be treated with creosote. Finally, the new plant provided employment for many Newfoundlanders.

Even at this early stage, the Board also began to perform the useful function of a clearing house of information on Newfoundland industries. It compiled economic data; it answered many enquiries of an industrial nature both from home and abroad; and it established a large number of valuable contacts with influential business organizations abroad, e.g. the United Kingdom Chamber of Commerce, the Federation of British Industries, the United States Board of Economic Warfare, the United States Office of Latin American Affairs, and the Industrial Conference Board of New York.

On May 12th, 1944, the Board suffered a grievous loss in the death of its talented Director, Mr. Claude Fraser. Despite this severe blow, the Board continued its work with undiminished vigour. The Executive was enlarged by the addition of four new members and was thus made more fully representative.

Two important new industries were established in the course of the year. One of these was the manufacture of marine engines. The great scarcity of marine engines in

Newfoundland as a result of wartime difficulties of procurement from abroad led the Board to interest one of Newfoundland's best engineering firms in their manufacture. The Board was able to negotiate favourable conditions on this firm's behalf with the Government, conditions which were decidedly helpful in establishing the industry. A special building was erected in St. John's to house the plant. By the end of 1949, this factory had produced 610 marine engines. The production of these engines, particularly in 1945 and 1946, was the means of assisting several hundreds of fishermen to carry on their fishing. Otherwise many of them would have been forced to stay ashore. In 1946, plans were formulated to enlarge the factory in order to accelerate the output of the small size engines and also in order to begin the manufacture of larger types up to twenty horse power. In 1946, the factory also experimented with the construction of steel boats.

The other industry initiated in 1944 was the manufacture of paper bags. A company, with a capital of \$30,000, locally subscribed, was incorporated for this purpose. Through the efforts of the Board, the emergency wartime restrictions on the export of the necessary machinery from the United States were lifted, and the factory went into production in 1945. It was originally hoped that the plant would be able to use the product of the Newfoundland paper companies as its raw material. Unfortunately, however, the paper produced in Newfoundland proved unsuitable, and Kraft paper had to be imported in order to meet the requirements of the trade. By 1946, the paper bag factory had installed a second machine and was producing paper bags in all the sizes needed in the local market.

Another notable feature of the year 1944 was the number and variety of the industrial investigations conducted under the auspices of the Board. The success

attained by the Thorold pulp and paper plant aroused the interest of the Board in the possibility of producing alcohol from the waste sulphite liquors of the Newfoundland pulp mills. Dr. M. M. Rosten, the designer and builder of the Thorold plant, and one of the world's foremost experts on industrial alcohol, visited Newfoundland in June, 1944, at the invitation of the Board. Following his inspection of the sulphite plants at Corner Brook and Grand Falls, he issued a statement declaring that the Corner Brook plant was capable of producing an annual output of 900,000 to 1,200,000 gallons; and that the Grand Falls plant had an annual productive capacity of 500,000 to 750,000 gallons. He added that the product could be 95% industrial alcohol, or 99.9% power alcohol, or even potable alcohol. Dr. Rosten was favourably impressed by Newfoundland's potentialities in this field, and believed that a basis existed for substantial development. He made certain propositions to the paper companies which they took under consideration.

The Board also discussed with two Canadian firms the possibility of opening a branch factory in Newfoundland for the salvage and repair of aircraft. Unfortunately, however, technical difficulties and the unavailability of essential materials prevented its establishment.

The Board made a preliminary investigation of the feasibility of introducing the manufacture of cement in Newfoundland. Limestone, silica clay and pyrophyllite had already been proven to exist in Newfoundland in enormous quantities. The Board sent samples of these materials to Allis-Chalmers Company of Milwaukee for testing purposes. The report from this Company, submitted in February, 1944, showed that these ingredients, when mixed in the proper proportions, will produce an excellent Portland Cement. However, the high wartime costs of production and the difficulty of procuring the necessary machinery caused further investigation of the project to be postponed.

The Board took a keen and active interest in the promotion of a furniture industry in Newfoundland. It was the opinion of the Board that there might well be a basis for the manufacture of a distinctly Newfoundland product made from native birch. It was believed that furniture of this unique type would command a special market by making a strong appeal to those who wanted furniture of Newfoundland origin and design. The Board hoped that, as a result, Newfoundland furniture products would be lifted out of the highly competitive market for utility furniture. With this objective in mind the Board arranged displays in St. John's of beautiful furniture made by Newfoundland workmen from Newfoundland birch.

The Board was convinced that the systematic development of handicrafts would confer inestimable benefits upon the people of Newfoundland. In the first place, it would encourage the profitable use of leisure which is particularly important in Newfoundland where there is much part-time and seasonal employment. This makes it very essential for Newfoundlanders to develop the home work habit. In the second place, the Board foresaw that, with the expansion of the tourist trade and with the increase of passenger traffic through Gander and other airports in Newfoundland, a very lucrative market for handicraft products could be developed within Newfoundland itself. In the third place, the Board realised that handicrafts would not only be financially remunerative but would also develop the innate artistic sense of the Newfoundlander. Handicrafts undoubtedly do make for a rounding-out of one's way of life. Moreover, they contribute to the proper use of leisure, which is one of the greatest problems of our age, especially in a country such as Newfoundland where seasonal unemployment is normal outside a few industrial areas.

Accordingly, in 1944, the Board instituted a survey of the handicrafts industry in Canada and in the North-eastern United States. The report of this survey, supple-

mented by films of handicraft activities in both these countries, was presented under the auspices of the Board, in the Newfoundland Hotel.

The Board then submitted recommendations to the Government for the encouragement of handicrafts in Newfoundland. The Board in 1945 engaged the services of Mr. Oscar Beriau, one of Canada's leading handicrafts experts, to inaugurate a country-wide handicrafts programme. The direct outcome of Mr. Beriau's report was the establishment, in 1946, of the Newfoundland National Handicraft Institute under a full-time Director.

In 1944, the Board also expanded its information service. It commenced the preparation of an Information Booklet, containing complete up-to-date data on Newfoundland's minerals, forest industries, fish and other natural resources, manufacturing sites, transportation facilities, labour organizations, and business corporations in the United Kingdom, Canada, and the United States. It soon became the most sought after publication on Newfoundland industrial affairs and required a second edition. Altogether, 15,000 copies were published and distributed.

In 1944, the Board also issued the first of two questionnaires. These were circulated throughout Newfoundland in order to promote the flow of ideas and suggestions to the Board. The purpose of these questionnaires was three-fold:

1. To solicit the interest and active support of the public;
2. To obtain a wide cross-section of opinion on possible new industries; and
3. To crystallise in definite form the views of Newfoundlanders on the industrial development of their country.

Throughout the greater part of 1945, priorities and other difficulties attributable to the war continued to hamper the Board's efforts and had the effect of retarding

industrial expansion. Nevertheless, some progress was made.

The Board assisted a firm in the northern part of the Island to increase its production of canned codfish by helping it to secure facilities to build a dam to enlarge its supply of water. The Board was also instrumental in engaging the services of an engineer to perform the work. It is interesting to note that this particular fish canning enterprise had originated under the auspices of the New Industries Committee, the predecessor of the Board.

As a direct result of the Board's interest in the construction of fireproof buildings in St. John's a company was formed to manufacture concrete blocks, bricks and tiles. A modern plant was erected in the neighbourhood of the capital, and drew its supplies of raw material from the sand and clay pits of Seal Cove, Conception Bay. Most of the male population of that community and many from outside secured employment in the industry. The company is also making washed sand and crushed stone, and was the first to produce ready-mixed concrete.

The publicity given by the Board in 1944 to the possibilities of furniture manufacture, bore fruit in 1945. A wood-working firm decided to begin the manufacture of furniture from native birch. The Board was glad to place on display in St. John's the first suite of furniture manufactured by this firm. The display excited many favourable comments. The firm in question decided to manufacture hardwood flooring also, and purchased machinery for that purpose.

About the same time, two other wood-working firms gave serious consideration to the feasibility of adding furniture to their list of products, and availed themselves of the Board's assistance in obtaining relevant information.

In conjunction with one of the largest industrial companies in Newfoundland the Board conducted experiments in the manufacture of cardboard. These experiments demonstrated fully the practicability of this project. Within a short time the company's laminating machine, constructed by the company's own mechanics, was running full time to fill boxboard orders for export. Encouraged by its success, the Company went on, in 1946, to experiment with the manufacture of laminated wall board. The results were entirely satisfactory.

The year 1945 provided several examples of the Board's cooperation with other public bodies in the conduct of enquiries into social and industrial conditions. At the request of the Government, the Board nominated representatives to serve on two very important committees,—the one on nutrition and the other to investigate the costs of carrying on the fisheries. The Board also acceded to the request of the Newfoundland Board of Trade to appoint one of its members to act on a committee to examine the practicability of reviving the sealing industry and the construction and operation of a Newfoundland merchant marine.

In 1946, the Board was fortunate in securing the services of Mr. H. J. Russell as a full-time Director. Mr. Russell, who had been a Squadron Leader in the Royal Canadian Air Force during the war, brought to his new post a broad technical training in the specialised field of aircraft manufacture and considerable experience in industrial processes. He continued to give valuable service to the Board as Director until its dissolution in 1950.

During the years 1945 and 1946, the Board went very thoroughly into the possibility of introducing specialised fish canning. Facts and figures were compiled and presented in person by an official of the Board to one of the largest canning companies on the mainland. It was chiefly because of this contact that, in 1946, a very large

canning plant was erected at Petries Point. The Board also encouraged a firm in the district of Notre Dame Bay to enlarge its fish canning plant.

With the cooperation of the Board, three woodworking plants installed up-to-date drying kilns in 1946. These kilns enabled the firms concerned to improve the quality of their products and to enlarge the range of their manufacture. By November, 1947, one of these firms had produced kiln-dried wood to the value of \$200,000.

One of the first matters discussed by the Board was the urgent need for a thorough survey of Newfoundland's water power. As a project of this magnitude was beyond the financial resources of the Board, the Government was urged to undertake it. At the Board's request, the Government prepared a tabulation of the water power concessions granted down through the years. A study of this disclosed that most, if not all, the water power rights had been alienated, in many cases for practically nothing. At the request of the Commissioner of Natural Resources, the Board drafted certain recommendations for future legislation designed to remedy this serious situation, and forwarded them to the Government. Unfortunately, these recommendations were not acted upon. However, the Government did accept the Board's recommendation that a thorough survey be made of water power resources. The Government also asked the Board to recommend an engineer to undertake the survey. The Board's nominee was appointed, and the survey began in 1947. The run-off of certain rivers was ascertained and other fundamental data were obtained.

In 1946 the Board established a valuable contact with the National Research Council of Canada. The Council, on being approached by the Board, offered its fullest cooperation and invited the Board to send a member of its staff to spend a period with the Council as liaison officer.

The work of the Board progressed satisfactorily in 1947. During that year, an endeavour was made by the Board to organise a wood-cutting operation with the object of providing a sufficient quantity of railway ties to keep the creosote plant at Clarendville on full production schedule. Moreover, a large programme of creosoting poles for the telegraph lines of the United States armed forces in Newfoundland was begun.

In consequence of the encouragement given by the Board, one of Newfoundland's clay brick plants was remodelled, in the course of the year, at considerable cost. In this connection it is interesting to observe that experiments in the use of Newfoundland clays for the manufacture of potteryware were initiated under the auspices of the Board and were subsequently handed over to the newly-established Handicrafts Centre to complete.

As early as 1942, the Board had interested itself in the possibilities of oxygen and acetylene production in Newfoundland and had brought in a qualified investigator to examine the feasibility of establishing a plant in St. John's. However, before any further progress could be made, the Government of Canada decided to erect an oxygen manufacturing plant in St. John's for war purposes. The matter was therefore dropped by the Board. However, the Board played quite an important part in the subsequent decision by a Canadian company to purchase the plant and continue its operation. In 1947, this company announced their intention to add to their facilities by the immediate construction of an acetylene manufacturing plant. The part played by the Board in this development was also quite substantial. The acetylene manufacturing plant went into operation in 1948 and has done splendid work. Besides meeting the requirements of local industry it supplied the needs of the Lighthouse Department. It is a great advantage to local industry to have acetylene gas as well as oxygen locally manufactured

and readily available. In the past, recurrent shortages, caused by delays in importation, frequently held up the work of local industries dependent on this product.

The Board also assisted a local shipbuilding company to secure its first contract, the construction of a yacht for an American sportsman.

Through the cooperation of the Board, an up-to-date plant for the manufacture of barrels was established.

The Board also gave every possible encouragement to the local manufacture of wooden toys, especially by arranging displays for a number of toy manufacturers.

As the Board was not satisfied that earlier surveys of Newfoundland's coal deposits were conclusive, it recommended to the Government that a more detailed survey be made in the Bay St. George area. The Government acted upon this recommendation, and the survey was begun in 1947.

On June 30th, 1947, the Board completed its first five year term of service.

During that period it held 212 meetings and studied no fewer than 90 industrial subjects. Towards the close of that period the Board requested the numerous firms which it had assisted to supply it with information concerning their subsequent operations. Only ten of them complied with this request. However, the returns from these ten firms showed an industrial development which more than justified the existence of the Board. These returns may be tabulated as follows:

Total capital invested.....	\$1,071,500.00
Approximate wages paid to end of June, 1947	900,340.00
Approximate value of goods produced or services rendered to the end of June, 1947	1,510,900.00

It must be emphasized that these are only partial results, because for one reason or another, many firms did not submit any figures. The Board, of course, understands and respects their natural reluctance to disclose business information which is, after all, their private concern. The actual results of the Board's efforts were much more far-reaching than the above table would indicate. At the same time, however, the figures presented in the table would in themselves represent an extremely gratifying return on the \$75,000 spent by the Board during its first five-year period.

It should also be borne in mind that the great majority of the enterprises assisted by the Board have not been long in operation. They may, therefore, be expected to increase both their payroll and their output as time goes on. Moreover, as the President of the Board was to point out in his address to the annual meeting held on November 30, 1948, "there have been numerous instances of assistance, rendered in one form or another, for which there is no means of tabulating the results. In fact, some of the efforts cannot be expressed in dollars and cents but are fundamental to advancement."

In view of the fact that the Board had given convincing proof of its great usefulness, the Government decided to continue it for another five-year period.

Before embarking upon its second term, the Board effected a reorganization and widened its membership in order to become more completely representative of all sections of the country and of labour as well as of management. On the recommendation of the Board, invitations were issued, in 1947, by the Government to the following representatives to become members or to continue their membership, as the case might be:—

Two representatives of manufacturing industries;

One representative of the Newfoundland Board of Trade;

One representative of the Bay of Islands Businessmen's Association;

One representative of the Newfoundland Federation of Labour;

One representative of the Anglo-Newfoundland Development Co., Ltd.

One representative of Bowater's (Newfoundland) Pulp and Paper Mills, Ltd.;

One representative of the Dominion Steel and Coal Company;

One representative of the Buchans Mining Company;

One representative of the lumbering industry;

One representative of the fishing industry;

One representative of vocational training and handicrafts;

One representative of transportation;

Twelve other representative citizens.

In addition, the Commissioner for Natural Resources continued as a member ex officio.

The re-constitution of the Board gave it added strength at a time when it needed it most, for the ensuing year, 1948, was perhaps the most difficult in its history. This was the year of the national referenda to determine Newfoundland's future form of Government. It was, therefore, a year of political uncertainty, in which commerce and industry were naturally extremely cautious with regard to expansion in any form. In these circumstances, there was little that the Board could do to stimulate industrial progress.

However, the Board put the year to good use by compiling additional information on Newfoundland's

economic resources and by sponsoring surveys of the Island's industrial possibilities.

One of the most outstanding of these investigations was a survey of Newfoundland seaweed, undertaken for the Board by an eminent authority, Dr. H. J. Humm, of Duke University, North Carolina, U.S.A. Dr. Humm surveyed the coastline of Newfoundland from the Burin Peninsula to Notre Dame Bay and presented to the Board a detailed report of the seaweed resources of the areas examined. His findings were summarised as follows:

"It is believed that Irish moss occurs in Newfoundland in sufficient quantities to keep a factory in operation the year around.

"The really important seaweed resources of Newfoundland are the brown algae, especially the kelps and rockweeds, from which algin and other products can be made.

"The principal resources of Irish moss seen on this survey are in Colinet Harbour, Placentia Sound, Ship Harbour (Placentia Bay), Sound Island, Marystown, Trepassey Bay, and Gander Bay.

"The growth of Irish moss seen on this survey appears to be related to the presence of a small amount of fresh water which brings with it nutrient salts leached from the land."

The Board also sponsored a survey of one of the birch-producing areas of Newfoundland. This was conducted by one of the best hardwood foresters in Canada, acting with local authorities in this field and on behalf of one of the leading manufacturers of plywood and veneer in the Dominion who was looking for more favourable areas in which to operate. The results were disappointing. The area selected was chosen because of its prolific growth of birch, but, unfortunately, it happened to have a very large percentage of unusable timber.

An investigation of the practicability of box production in Newfoundland yielded more satisfactory results. The Board undertook this particular survey because some of the markets for Newfoundland codfish were demanding boxed fish instead of fish in casks. Moreover, it had been noted that the cost of manufacturing boxes, casks, and barrels was much higher in Newfoundland than in rival fish-exporting countries. It was therefore difficult for Newfoundland codfish exporters to meet foreign competition. The Board accordingly assisted a Newfoundland forestry expert to make contact with a number of box manufacturers in Nova Scotia and New Brunswick. He studied their methods of production and ascertained the basic causes of the cost differentials. A report of this investigation was compiled and was distributed to interested parties in Newfoundland.

The Board was also instrumental in bringing about the local manufacture of Labradorite jewellery. For many years Labradorite had been sent out of Newfoundland to be cut and polished and then brought back to be sold. Labradorite jewellery is attractive to tourists, and the Board was convinced that the cutting and polishing of this unique stone would have substantial possibilities as a local industry to meet the demand of the tourist and export trade. Accordingly, the Board set out to discover local talent to prepare the stones. The success of the Board's efforts in this direction was strikingly demonstrated by the splendid array of Labradorite articles exhibited at the 1948 handicrafts display.

During this year the Board also helped to launch yet another wood-working plant.

The Board also cooperated with the Agricultural Division of the Department of Natural Resources in assisting a bulb grower from Holland to establish a successful nursery near St. John's.

1949 proved to be another difficult year. True, Newfoundland's political destiny had been decided in the second referendum of the previous year. Political uncertainty had thus been removed. On the other hand, however, most Newfoundland businessmen were as yet none too familiar with Canada's fiscal system, and the impact of Confederation on Newfoundland's secondary industries was still largely unpredictable. Capital investment in local undertakings was therefore deterred by economic uncertainty and awaited a clarification of the effects of Union.

The Board therefore devoted its main efforts to instituting surveys which would disclose information that would be useful in the future when capital would again seek fields of profitable investment.

By far the most outstanding of these investigations was the comprehensive Industrial Survey conducted by Donald, Ross and Company of Montreal, a firm which had carried out a similar survey of the Province of Manitoba. The work of the survey of Newfoundland's resources was greatly facilitated by the exemplary co-operation of Government officials and businessmen. Not one request for information or advice went unheeded. The Industrial Survey was completed in 1950. The report, presenting its findings, was published in the same year and was widely circulated by the Board. It is an authoritative and up-to-date document, describing, amongst other things, the economic geography, principal markets, raw materials, labour supply, established industries, trends of economic growth, and prospects for new industries. Altogether, it is a veritable mine of information on the economy of Newfoundland, and it is, in itself, a monument to the work of the Board.

An industrial familiarization tour of Newfoundland was also organized by the Board. Under its auspices a group of officials from the Industrial Development Division of the Canadian National Railways visited New-

foundland in the summer of 1949 and spent a full month visiting a large number of towns and villages in order to obtain a clear picture of the Island's industries and latent industrial possibilities. Mr. C. C. Pratt, President of the Board, Mr. W. A. Reid, Vice-President of the Board, Mr. C. A. Crosbie, and Mr. L. J. Harnum, the Secretary of the Board, accompanied them in the more important industrial areas, and Mr. H. J. Russell, Director of the Board, acted as Conductor for the entire tour.

A survey of the possibilities of establishing a wall-board mill in the Corner Brook area was also undertaken by the Board. To assist it in this enquiry, the Board engaged the expert services of the well-known firm of Stadler, Hurter and Company of Montreal.

The Board also introduced Mr. E. E. Cosgrove, Regional Representative of the Technical Information Service of the National Research Council, to some seventy different industrial operations in and around the Avalon Peninsula. He explained to each firm the nature of the services which his organization was prepared to render free of charge. Moreover, when he left he took with him over thirty technical problems to be solved.

Mr. G. D. Mallory, Director of the Industrial Development Division of the Department of Trade and Commerce, and his chief engineer, were also introduced by the Board to various industrial concerns. Mr. Mallory, too, outlined the services which his Division was equipped and prepared to render to Newfoundland industry.

1949 was the last full year of the life of the Board. It was dissolved in 1950 and its functions were transferred to the Department of Economic Development created by the Provincial Government in 1949.

A resume of the Board's activities, compiled towards the close of 1949 on the basis of information supplied by some of the industries the institution of which had been

influenced by the Board, showed that these industries had a capital investment of over \$1,500,000, that they had paid upwards of \$2,000,000 in wages, and that they had produced goods and services to the value of approximately \$3,000,000. Some idea of the success of the Board in stimulating the industrial development of Newfoundland may be gained from the fact that, for each dollar of public funds spent by the Board, approximately fifty dollars have been invested in the Island in capital investment and production value.

To this must be added the wealth of economic information gathered by the Board, much of which is embodied in detailed reports which are available for use in the future.

All in all, the Board, in the seven years of its existence, rendered magnificent service to the people of Newfoundland. Its achievements are all the more remarkable when the difficulties it encountered are taken into account. It began its work in the midst of war, when machinery and materials for the establishment of new industries were virtually unprocurable. In the post-war years, more than one promising avenue of industrial expansion was blocked by the exchange restrictions which distorted international channels into unnatural channels. In its last three years it was beset by the political and economic uncertainties which beclouded the industrial future of Newfoundland and which forced venture capital to "mark time."

Yet, despite these almost insuperable obstacles, the Board never wavered in its faith in Newfoundland's future and never faltered in its unremitting efforts to assure that future.

Newfoundland owes a debt of gratitude to the financial supporters of the Board, who contributed almost \$90,000 in voluntary subscriptions to aid it in its work. Newfoundland is indebted, also, to the permanent officials

of the Board who served the organization with outstanding zeal and efficiency.

The greatest tribute, however, must go to the members of the Board, and especially its President, all of whom laboured hard and without thought of recompense, in a selfless spirit of public service, to strengthen the economic structure of Newfoundland and raise the standard of living of her people. They worked quietly and without ostentation. But they had vision and a wide practical knowledge of the commercial and industrial life of Newfoundland. They worked as a united team and in a great cause. They achieved a large measure of success. Their reward is in the knowledge that the Newfoundland Industrial Development Board has made a real contribution to the welfare of our Island, a contribution the effects of which will endure long after the Board has passed into history.

ADDRESS

*Delivered by Mr. C. C. Pratt on the Origin and Purposes
Of the Newfoundland Industrial Development
Board, 1942*

I am glad of this opportunity of presenting to you a more complete picture of the Newfoundland Industrial Development Board than you have been able to obtain from the various items appearing in the press from time to time. Being a body created to promote industrial improvement in the Country and to play its part in providing opportunities for wider avenues of employment, it is essential that there be a full understanding of it.

Origin of Organization

I think it would be useful for me to trace the origin of this organization and how it came into being. The terrible depression through which this Country went until two years ago or so will stand as one of the tragic chapters in our history. The nightmare of a peak of 80,000 people on relief in a population of 300,000 will not be effaced in one generation. In such times it is natural for the finger of reproach to be pointed at each other. Reproach was piled on business for not doing its part; on Government for its shortcomings, and on labour for not being responsive to its obligations; in fact futile blame was apportioned in all directions. It was in such an atmosphere that the idea of a joint approach to the industrial problems of the country by some organized method originated. Its origin then was the business man's acceptance of the challenge to do something more than merely pursue its own particular business.

Outside Efforts Studied

In approaching the methods by which this could be done a study was made of the efforts successfully carried on in that direction in the United States and Canada. Nearly three years ago now, certain representative business and professional men were asked to form themselves into a New Industries Committee, as it was called, which had on it the Commissioners for Finance and Natural Resources. This was a voluntary Committee which met every fortnight for a couple of hours to discuss the possibilities of new industries. A careful examination of many possibilities was made and reports were received from technical authorities on some of the proposals. After a period it became apparent to everyone that a voluntary committee without a permanent staff could do very little. Committees can give ideas, and direct policy, but cannot in the fullest sense be creative. Furthermore, that close application to problems which is so necessary is not usually found in committees.

The Essentials of Continuity of Effort

That Committee then turned to a study as to how the functions of such an organization could be properly carried out and it sought the advice of organizations abroad as to a suitable basis of operation. By request, I visited Canada and the United States and talked with the heads of the organizations who were doing such work as we wanted to do. It was found that the idea was not new and that many organizations of the kind we had in mind already existed and were operating successfully.

Advice From Abroad

We were able to get advice from men who had made a world reputation in the rehabilitation of the industrial life of countries in Europe and South America. These competent sources recommended that we engage a leading industrialist who had specialized in this line of work in

other countries and who holds a foremost place in his own country—the United States. We secured the services of Mr. G. H. Dorr and his brother, one of the most eminent American scientists in the industrial field, Mr. J. V. N. Dorr. These gentlemen came here to give us their advice as to how such an organization as we have now in being should proceed, and how we could use the technical and scientific services of other countries to stimulate our industrial life.

I need not mention here the reasons for the delay in bringing this Organization into being, since that report was made. I will pass that over by making the simple statement that it was not because of any lack of interest or because of procrastination on the part of the members who had this work at heart. With the coming here of Hon. P. D. H. Dunn, the Commissioner for Natural Resources, greater progress was made.

Finance

There were two ways in which such a body could function: one would be to have it financed by the Government, which would make it simply another sub-department of Government; the other was to have it financed jointly by Government and business. Of the two, the latter was chosen as a deliberate and voluntary act on the part of business.

It was realized that if this organization was to have prospects of success it must have a trial period of at least five years. A budget of \$25,000 per year was tentatively set down. The Government agreed to pay \$12,500 per year for five years and business agreed to find the balance of the requirements, around sixty thousand dollars for the five year period. Surely not an empty gesture on the part of business and one which I think establishes a precedent! As you are aware the subscribers include the two paper companies, the Buchans Mining Company, the

Dominion Steel and Coal Corporation, the four Canadian Banks operating in this country, as well as a considerable number of mercantile and manufacturing concerns in the country. It is hoped to increase the number of subscribers and I might point out that up to date, except for the four Banks and one other company, all the financial support has been forthcoming from Newfoundland organizations. We are anticipating that a similar interest will be taken by outside corporations which are doing business here, thus sharing with Newfoundlanders the responsibilities for this effort.

The importance of the position of labour in industrial expansion was appreciated from the start and in the formation of the New Board a representation of labour was included.

Incorporation

It was on that broad basis, then, that the Government during this year passed an Act of Incorporation and the Board was established. It is now functioning with its office in the Board of Trade Building, and the permanent Director, Mr. Claude Fraser, formerly Secretary for Natural Resources, is installed in office, as from July 1st. of this year.

As this point I should say that when the idea of the permanent board was evolved, conditions in the country were very different from what they are now. Since then the immediate need for employment has been met. New Industrial development has run into tremendous difficulties by reason of diversion of materials, particularly of metals, to war needs. Nothing in the way of plant and machinery can be obtained except by high priorities which are given only for war purposes. Freightage is available only for bare necessities. Even the employment of people is a secondary consideration as compared with the need for conservation of material and effort for the war.

Reasons For Functioning

It is frequently asked: why hasn't the movement been dropped at this time and taken up after the war? I answer that **FIRST**, by asking: has our best effort been made to promote war industry in this country? **SECOND**: there will shortly be large numbers of our people out of employment. Cannot some avenues of employment be found which may be missed if such a board as this is not searching them out? **THIRD**: the policy of this board is based on long range planning. As I said, five years are set down as the necessary period for a fair trial. Can anyone be found who will think that within that period there is no possibility of running into a situation as gloomy and as deadly as prior to the war? Just as it is certain that industry cannot be plucked from trees, as and when required, so it is certain that whatever industrial revival we get must come by careful planning and tedious search for opportunities. Even if we cannot get industries now, who will deny that we have no time to lose seeking out and building up the fullest range of possibilities? **Fourth**: and the final answer to the question—why hasn't the movement been dropped and taken up after the war?—is that the need for employment of our men who are overseas, and who, we pray God, will be returning some day, is certainly worth our best planning.

The Board Can Do Its Part

I do not need to remind you that no one in this movement is foolish enough to think that we have in this organization a panacea for all our industrial ills as and when they recur, but we do feel that we are able to render assistance and that we want to do our quota by honest and impartial effort. Neither do we think for one moment that this organization is or can be a central planning organization for the whole country. The Government of the country have the major responsibility for this, but we feel that in all this the Newfoundland Industrial

Development Board has a field which is not covered and which cannot be covered except by it or a similar organization. There is no need for any duplication of effort. There cannot be duplication because the field is as broad as the economic needs of all our people, and that is broad enough. There is every need for the co-operation and the working together of every agency which has the same objective of public welfare before it. The Board, by reason of the Government contribution to its funds, and also by the agreement of the Commissioners as the heads of the Departments, is assured of the Government's fullest co-operation. We have asked for it and we have been assured of it.

Courts Recognition

Right here there is just one note that I would like to inject, not by way of criticism, but as a helpful thought. The Board in its efforts is not looking for credit for its accomplishments although, naturally, it wants to get recognition in the public mind for what it is trying to do and what it actually does. It may be thought that this or that particular line of industrial development should be under the care of this or that organization or department. Who cares what agency brings about an industry which is helpful to the community as long as we get it? In the economic life of this country it does not matter two straws how an industry comes into being or what agency evolves it, whether it is of the fisheries, the forests, mines or what not, as long as we get it. It is in that spirit that the Board will give its fullest co-operation and asks for the same.

This war is going to bring tremendous changes in our country. Many old methods will be thrown into discard, new problems will arise which will be staggering in their magnitude and all agencies which can lend any contribution to the solution of these problems, whether they be Development Boards, Boards of Trade, Government Agencies, Labour Councils, bodies of citizens of whatever

form, should have fullest opportunity of playing their part.

Non-Profit Organization

The Newfoundland Industrial Development Board is a non-profit earning organization. The articles of incorporation which were drawn up by the members themselves and legalized by the Commission of Government, contain these words: "The Board shall not engage in trade or carry on any enterprise for profit nor devote any part of its funds to making a grant, advance or loan to any trade or industry." Another section provides that the members of the Board shall serve without remuneration. The objects of the Board are set out in the Act in the broadest possible terms and embrace the whole field of economic endeavour.

Aims and Objects of The Newfoundland Industrial

Development Board

(a) To provide a bureau of information on industrial, commercial and economic affairs which may provide data, or afford information on new methods of operation, industrial and commercial processes and products.

(b) To assist and encourage industrial, commercial and economic development and the creation of new and the expansion of existing industries in Newfoundland.

(c) To create and foster, through the co-ordination of industrial and commercial agencies, an effective means of co-operation in economic progress.

(d) To receive from any sources, examine into and prepare reports upon any proposals designed to create or assist in the industrial and commercial development of Newfoundland.

(e) To assist in providing contact between local enterprises and research institutions with a view to encouraging industrial and commercial research.

(f) To collect and consider and analyse such data, statistics or other information relative to or concerned with any industries and from any interest dealing with the production, preservation, transportation, processing and domestic consumption of the products of existing local industries which may be capable of being established in Newfoundland.

(g) Generally to take such steps as the Board think necessary and expedient for properly carrying out the foregoing objects.

Proposals Confidential

The organization affords business concerns and individuals a service whereby their ideas for industrial expansion and development may be investigated and studied. The Director has been given authority to keep confidential any proposals submitted to him, whenever such confidence is requested and to render reports on those proposals in a confidential manner.

The Board itself will search out industries which may have an application to this country and whatever appears to make for a potential industry will be investigated. All the data that it is possible to obtain will be given publicity here and abroad.

Research Institutions

One of the most striking features of the industrial life of modern countries is the tremendous value of the research institutions. We cannot have such research programmes here, but we can benefit by the result of those abroad. Hundreds of millions of dollars have been spent in the United States alone on industrial research which in time is reflected in industry. Except in certain specified

fields we have no organization in this country whose business it is to keep in touch with the result of these research institutions. Even though we only get an idea here and there, the sum total may be of great value.

One feature of research institutions is that they are not monopolistic in their ideas. It should be somebody's business to learn of the result of these scientific developments as applied to industry and to see that we avail of everything that can be adapted to industry in this country.

Useful Contacts

Another sphere of activity is in keeping in touch with the business development organizations of which there are so many on the Continent. Such organizations exist for the purpose of creating business opportunities for their members and opportunities for the profitable investment of capital. The Banks in Canada and the United States, and other institutions, have their business promotion departments, which offer very useful contacts in seeking capital for industry.

Surveys

Personally, I am convinced of the need for a survey of our industrial potentialities. A comprehensive and thorough survey of the entire field is obviously beyond the scope and power of the organization which I am discussing. A complete survey would be very costly and prolonged. I think the day will come when it must be done. A survey which covers one field and then another and goes hand in hand with efforts for practical development is the logical course.

Our Possibilities

It is too often said in this country: "What is the use of all this? We have not got the resources here to develop." Personally, I do not subscribe to that thought which is defeatism in its essence. We only have to think for a

moment and we can call up countries with less natural advantages than ours which maintain populations many times as great. How many countries are there in the world with the rich fisheries at their door such as ours?

We are not a bit interested in the skeptic who says nothing can be done here. If he enjoys his skepticism, let him have it. There is just one thing he can be sure of, his skepticism will create nothing and help nobody.

A Helping Hand From Newfoundlanders .

We are interested in getting a helping hand from Newfoundlanders who feel that Newfoundland should be a better place for our people to live in; from business men who realize that good business cannot be built on poverty, and from everyone who regards an earnest effort worth encouraging. The Board is not promising spectacular results—the spectacular way is always dangerous—and we probably could not get such results anyway. We are promising a close and constant application to the problem of industrial development. We believe in the idea that has taken shape in this Board and by the tedious processes which are inseparable from this class of work we shall pursue our objectives.

ADDRESS

*Delivered by the President, Mr. C. C. Pratt, at the Annual
Meeting, August 12, 1943*

In presenting my comments at this First Annual Meeting of the Newfoundland Industrial Development Board, I do not need to dwell in detail on the subjects which have been considered or the work done, as these are embodied in the Assistant Director's report now submitted for your consideration. Weekly meetings of the Executive and monthly general meetings of the Board have been held throughout the year.

The Board has been deprived of the services of its Director through illness, and the appointment of an Assistant Director has been made. The effectiveness of the work devolves on the permanent staff, with such guidance as the Executive and members may be able to give. The members of the Executive not only give their time and experience without remuneration but contribute their money to the maintenance of this public service.

The experience of the first year has revealed that the Board can serve a useful purpose in the economy of Newfoundland.

When the Board was inaugurated a year ago I mentioned then in a public statement that, from the point of instituting peacetime industries in this country, the time was unpropitious because machinery and materials for undertakings not directly connected with the War effort were impossible to obtain. I further stated that, viewed solely from the point of view of immediate results such as would impress the public mind with the practical

benefits to be derived, we might well defer its beginning until after the war. It was not thought advisable to do so; first, because we could use the time to seek out such wartime industrial possibilities as might be of advantage to the war effort and provide our people with employment when work on military bases ceased, and second, that by constant investigations and surveys and by the compilation of facts we could build up a list of potential industries which might be brought into being later.

While the work of the past year has not been without concrete results, as may be gathered from a study of the Assistant Director's report, the Board has steadily pursued its enquiries on a long range basis which in time will, we hope, bring opportunities for profitable employment of capital and labour.

Perhaps never before has the need for an organization studying new developments been as apparent as at present. Scientific developments in industry are proceeding at a fast pace and, although these are now chiefly confined to war needs, they will affect the livelihood of everyone from the humblest to the highest in years to come.

Nutrition is taking on a new meaning under war conditions. The preparation of food is undergoing radical changes and the extraction of nutritional values from products hitherto unused, or little thought of for that purpose, is proceeding apace.

While the Newfoundland Industrial Development Board is anxious and determined to use its powers and resources to the fullest extent, it is only fair to those who are its associates to reiterate that, within its limited means, its function is complementary to any general post-war planning by the Government and its subsidiary organizations. Thus, in regard to agriculture, for instance: if, following the survey of soil possibilities now being

undertaken, there should result widespread land clearing and cultivation, those engaged therein must naturally have a market, and such market can be found only among industrial workers. Any development of agriculture to a point of major production, therefore, postulates, of itself, the need for a local market which industry must provide. Otherwise a kitchen garden will suffice for everyone. To produce a successful economy the industrial worker's earnings and those of agriculture and other food producers should strike an approximate balance.

Again, consider the case of the fisheries. The general policy as affecting regulations for the fishing industry, in all its ramifications, falls within the jurisdiction of the Newfoundland Fisheries Board. Government policy largely determines the future course of this industry. The Newfoundland Industrial Development Board recognizes the fact but feels it should have a part to play in promotional effort as relating to new developments of the fishery itself and industries subsidiary to it.

The major problem facing our people is to increase the value of our exports. These fall within three main categories.

1. Fishery Products.
2. Forest Products.
3. Mineral Products.

Except in the paper industry it is a fact that Newfoundland has been lamentably under-industrialized. Our fish (with the exception of comparatively recent steps in freezing and production of meal and oil) has been exported, we might say, in raw state. Newsprint will probably always be the main product of our forests, but new and multiplied forms of wood products open up a promising avenue of increased export value to which attention is being given. Whether manufacturing industry based on our

ore extraction will attract capital investment is something which only the future can tell.

Of the three chief products the one which holds the greatest promise is the fishery. The development of this resource, if justice is done to it, is, in my opinion, only in its infancy. The chief cause of the low standard of living in this country in the past has been the lack of fishery development, and the salt-codfish-mindedness of those engaged in the industry. Salt codfish will always be an important article of export but it should be secondary and not primary.

A popular misconception of the industries supplying our local needs is that such industries are artificially maintained by tariff privileges. It is true that these industries require a tariff, but, while Newfoundland's economy requires us to collect our revenues primarily by Customs tariff, it is surely sound to give employment in the country through industries which operate within the general range of the prevailing Customs duties. An examination of the tariff will reveal to any impartial enquirer that the protection, afforded articles manufactured for local consumption, compares not unfavourably with the tariff on numerous goods not made here, and there are many cases of much higher tariffs being imposed on goods not made and which cannot be made in this country. The local manufacturing industries in the St. John's area alone, employing between 2500 and 3000 persons with an average monthly payroll of a quarter of a million dollars are not of small consequence. I think the case is fairly established for local consumer industry unless universal tariff agreements in the post-war period make it desirable and feasible to change our whole fiscal policy.

The terribly high cost of living in Newfoundland today is not only distressing to the consumer but is hitting at the roots of industry.

It is essential that rates of labour be closely related to cost of living, and it is obvious that a correct competitive position cannot be maintained if our cost of production gets too far out of line with that of neighbouring countries. I am not laying down any formula for a fiscal policy for Newfoundland, but I would like to make this point: There are numerous articles of essential use that can never be produced in this country which should receive first attention in any scaling down of duties and thus leave room for manufacturing industries to be created within the framework of a revenue tariff.

An urgent need for Newfoundland is a competent and scientific survey of resources on which industry may be built. By survey I mean not only acquiring the knowledge of what things we have, but, what is just as important, the gathering up of all the facts surrounding the economic use of them, matters which every investor requires to know before he decides to lay out his money. This can only be done by competent and trained investigators. One of the greatest assets of the country is water-power. At the earliest opportunity a thorough survey should be made of the power potentials of the South Coast and other areas. This, of course, is beyond the means of this Board to finance. As far back as 25 years ago representations were made by interested parties in the country to the Government of the day for a hydrographic survey of our water-power possibilities. Canada, prior to that time, had conducted such a survey, and complete data was available on every stream from coast to coast.

What we lack most in order to build up industry is coal. Perhaps the evidence that the West Coast areas cannot be developed, is conclusive. I do not know. One thing is sure, the issue is of such importance that no doubt should remain even at the risk of gambling some public money to find out. If there are possibilities it will be fatal to them if we miss this wartime opportunity of development.

The Board will do what it can, within its means, to build up cases for feasible development, and enquiries are being made into the feasibility of using our gypsum deposits. Other limited surveys will be instituted from time to time, as means for financing them are found, but the general issue is one for the Government, and the function of this Board is to endeavour to assist in industrial development based on the findings.

While manufacturing industries which give the utmost return are those based on the use of the country's natural resources, I feel that a useful field of investigation may be found in processing certain imported raw material for export trade. The world is full of examples of countries where such industries are the main resource. It is idle to speculate in a broad way at this time on these possibilities as the post-war tariff readjustment of countries will have a major effect on this issue. Development of electric power or being ready to develop it when occasion requires, and the opening of roads to promising areas would have a profound effect.

A stabilized and moderate corporation tax policy for the encouraging of new industrial developments would be of great value. The fact that we are masters in our own house in this regard could be used advantageously in times when the burden of war debts of other countries may not leave them as free as ourselves to pursue a liberal attitude towards new capital investment. To be effective, however, there must be a settled policy which will be widely known and can be used to attract capital. Newfoundland's progress will, in a large degree, depend on our success in encouraging capital investment in the country's industries. An acceleration of industry would result if machinery and parts, mill equipment, and all tools which are to be used in labour-giving enterprises were admitted free of duty, following the practice now applied to farm implements. These things are the foundation of employment in industry.

I wish now to advert to War industries. During the period when a frantic endeavour was being made in other countries to build up War industries our full capacity for employment was taken up by military base construction. Canada used that period to put hundreds of millions of public funds into its plants, which marks the biggest industrial advance that country has known. Even places far remote from industrialized centers have received a tremendous impetus. Many of these plants and facilities were built on terms of acquisition by heavy depreciation allowances and other methods which will ensure their remaining in the hands of operators for peacetime pursuits. Practically no private capital has gone into these investments. Newfoundland has had none of these advantages. The nature of our prosperity has been entirely transitory.

Wartime production works on the basis that speedy delivery of goods comes first while cost is secondary. It is in such times that industrial facilities are built up.

The inquiries instituted in the past year regarding several industries applicable to War needs have met with the reply either that the capacity developed or in process of development is sufficient to meet demand, or that it is too late in the progress of the War to break the sod. The latest instance of this was the Board's endeavour to interest British authorities in the production of birch plywood for airplane manufacture. Whether or not the capital would have been forthcoming from our Government, had Newfoundland been able to find the labour in the earlier stages of the War, is an open question.

There is no mistaking the fact that things are moving fast in these days. While the war is on, the basis for tremendous changes in industry is being laid. Even today changes can be seen that are affecting our salt fish industry. Spain and Portugal have a policy for building fleets of fishing boats to cut down their volume of importations.

We shall be fortunate if, within a short period after the War, our salt fish exports to Europe are maintained at existing levels. Other countries have introduced means of utilizing their unused and waste woods, which is of importance to the future of our newsprint industry. Long range planning has its place but don't let us commit the fatal error of making it too long.

Public attention is focussed today on Post-War problems. The printing presses are rolling off an unending stream of views and every alternate radio address is on the subject, but we are apt to forget that the problems of Newfoundland will not be solved by platitudes and reasoned arguments from Washington, Ottawa and London. What we are doing and planning to do for ourselves alone will count.

There is need for a more general concentration by business men, through their organizations, on the problems that are ahead. It is noticeable in this country that organized business has not been as active and pronounced in expressing views on post-war planning as in Canada, for example. Our future may be more obscure than that of the Dominion, but their trade organizations and leading business houses have helped greatly to evoke and crystalize public thought on future issues. The structure of successful business, whether in trading or manufacture, rests only on one foundation, that of lucrative and steady employment for the population. The need for laying that foundation solidly and well is accentuated by the obligation to provide for the rehabilitation of our men of the Armed Forces when they return. It is the very essence of good policy to stand in active co-operation with every agency aiming at a stabilized economy for the future.

Tied inseparably with post-war planning are the uncertainties of international tariff readjustments, currency depreciation, subsidies, competition in aerial and other forms of transportation and other factors. It is idle

to expect a Utopian world in which countries will not angle for particular advantages. The disposition of exportable commodities of the United Nations is today subject to zoning. Under pressure of War needs no regard is being paid to maintaining established trade relationships. Brazil, for instance, gets none or very little of our fish this year. We must import our tea from Canada, and so forth. How long after the War will the needs of the times enforce controls of this nature?

What will be the effect on our fish and timber products of rehabilitation planning by the United States and Britain with the Scandinavian countries?

To none of these questions or to a hundred others is there an answer today.

It seems to me essential, therefore, that we shall have to provide for a watching brief, not only when formal conferences are taking place but when thoughts are being shaped on these issues.

Never in our history has it been so necessary as now to have our accredited representatives, in Canada and the United States particularly, keep in touch with the trend of thought and advise us how best we can fit in. There is grave danger of our becoming the odd piece which cannot be fitted into the post-war jig-saw puzzle.

Right at the moment such representatives should be able to influence the movement of trade from those countries which, to the detriment of our revenue and consumers' needs, seems bogged down by the red tape of interminable and indefinable regulations.

Not the least service that competent and active representatives could render would be to keep before industrialists the opportunities for employment of capital in this country, working in conjunction with the Newfoundland Industrial Development Board.

The Board needs more public interest in its work, interest of the kind that brings suggestions to it. Persons with ideas which might lead to the introduction of some industry, whether small or great, will find the staff ready to correspond abroad and institute enquiries and negotiations on any phase of their problems. The past year has not been without many such evidences of interest but more are needed. When required, personal enquiries will be kept confidential with the staff.

In conclusion, I wish to say that Bowater's (Nfld.) Pulp and Paper Mills, Ltd., and Anglo-Newfoundland Development Company, Ltd., have been particularly helpful in actively assisting the work of the Board.

The Executive wish to record their appreciation of the whole-hearted interest and loyalty of the Director, Mr. Fraser, in the performance of his duties prior to his regrettable illness.

For myself personally, I am happy to express my feeling of admiration of the way the members of the Executive gave unstintingly of their time, and at very considerable sacrifice, in their endeavour to establish this experiment as a useful factor in the industrial life of our country.

ADDRESS

*Delivered by the President, Mr. C. C. Pratt, at the Annual
Meeting, August 17, 1944*

The Secretary's report, which has just been presented to the meeting, covers the specific activities of the Board for the past year, and it is unnecessary for me to make any extended reference to it.

During the year the work of the Board has been somewhat dislocated due to the prolonged illness and subsequent death of our late director. The passing of Mr. Fraser is very much regretted, as he worked indefatigably to promote the objectives of the Board, and the serious illness from which he was suffering revealed the great handicap under which he had been using the fine talents with which he had been endowed. The Executive have, on your behalf, expressed their sincere sympathy with his bereaved family.

We were very fortunate in maintaining the continuity of the work by having the services of Mr. L. J. Harnum, the Secretary, who has, for the time being, taken the responsibility of both offices.

The Executive have decided that a need exists for the employment of a highly trained technical official, preferably an engineer with experience in the field of industrial surveys and business development. Under present conditions the selection of such a man offers considerable difficulty, but enquiries are being actively pursued, and it is intended to make an appointment as soon as possible.

When the founders of the organization presented to the Government the proposal for the formation of a Newfoundland Industrial Development Board, stress was laid on the need for a thorough survey of Newfoundland's resources as a foundation for their development. It is true that some surveys have already been inaugurated by the Government, notably of soil in certain promising areas; technical examination of the frozen fish industry and a geological survey have been in progress for some years. These are steps in the right direction, and of paramount importance. What this Board urges is an extension of that program to embrace every known resource. Such a survey should cover every industrial possibility.

The first essential is a stocktaking of what resources we have. Included in such a program would be a thorough hydrographic survey of all our potential waterpower, mineral prospecting to amplify the work of the geological survey, fishery research in our waters to determine the existence, location and movements of fish.

It is unfortunate that the last named work, which was so auspiciously begun by the Biological Research Station under Dr. Harold Thompson's direction, has not been continued. It should be resumed at the earliest opportunity. There are many other fields of research such as wild fruits, forest wealth, wild life, seaweeds, etc., awaiting examination.

This, as I have said, is stocktaking. Without it this Board or any agency existing to encourage industry is lacking a sound basis of operation.

Having taken stock it is just as important to study how these resources can be used economically and competitively. It is in this sphere that the Board feels it can be of practical assistance, but it needs first to obtain more intimate knowledge of the resources we actually possess.

We all realize that there are three distinct factors involved in the development of an industry:—

- (1) Knowledge of materials available.
- (2) What is the cost of developing and marketing?
- (3) What are the values obtainable for the product?

These factors are all inter-related and require study by specialists in widely different fields. Such studies will have regard to the changing trends of trade, newly discovered adaptations of products and an intimate touch with new processes and uses for goods resulting from industrial scientific research, which today is working with unprecedented impetus. Incidentally, new treatments of wood have recently been demonstrated to the Board which are revolutionary in the use of common varieties.

We need a blue-printing of our industrial possibilities as a basis for an earnest endeavour to attract investment in labour-giving enterprises. What has been and is being done in Newfoundland in respect to the examination of our resources should be regarded as only a beginning of a thoroughly comprehensive plan for devising means for lucrative employment of all our population.

The Secretary's report refers to specific investigations that have been undertaken by the Board and this organization is ready to offer its services and engage specialists for the examination of particular objects on behalf of anyone seriously interested in investment, but a comprehensive survey is far beyond the means of this Board to direct or finance. It is, of necessity, a national matter and should be adopted as a Government policy to be pursued as fast as competent personnel can be engaged to undertake it.

The previous recommendations of the Board are supported by the findings of the Advisory Committee on

Reconstruction in Canada, and I quote from their recent report to the Dominion Government as follows:

"The Sub-committee is impressed with the need of survey data, and with the fundamental importance of research. Provincial authorities are hampered in their planning by inadequate knowledge of their natural resources. Surveys—aerial, topographical, geological, forest, wild-life, fisheries, soil, are of first importance. Much larger staffs than have hitherto been available are needed for this work if development projects are to be wisely planned. What can be done now, before the war is over, should be done, in order that future developments may be based on adequate knowledge. In the wider and more varied use of our resources, research will play a fundamental part. This has been abundantly demonstrated in the carrying on of the war. It will be of no less value in the building up of a stable peacetime economy. Our research organizations, federal, provincial, industrial, and university, should receive more generous support and encouragement. They are vital to a program of full employment."

On previous occasions we have urged the importance of a hydrographic survey so that our priceless asset of water power may be more generally available to our people. I think the recommendations of the Committee referred to above as applying to Canada have a distinct application to this country. I take the liberty of again quoting:—

"One of the most important social services which can be provided to the rural and farming communities of Canada is the extension of electrical power facilities to the rural town and to the farm. This is more than an industrial development. It is a social need. It will do more than any other single factor, except equitable prices for farm products, to stabilize farm life in Canada. As a social service, it may require the assistance of public funds in

order that rural customers may enjoy low-cost electrical services."

A wide programme of road construction connecting communities would be a social and industrial service of inestimable value. This country has many years of arrears to make up in this respect. It is my opinion that adequate road connections and widely developed electric power would have a tremendous influence on the social outlook and material well-being of our people.

I cannot emphasize too strongly the need for the training of our own young men and women for the carrying on of research work within the country. Given adequate training, no personnel are as valuable as those who belong to the country and have grown up in the local environment.

Universities in other countries have provided a scientific approach to industrial problems. This has made for progress and I hope that our Memorial University College may be given an opportunity of developing into an institution which will adequately meet the needs of this country. Not only would a properly equipped Newfoundland University provide within its professional personnel a lead in scientific approach to industrial problems, but what is still more important, it should play a major part in training our local men and women in the work of conserving and developing our resources.

I might suggest here that an urgent need in this country is the education of men for mineral prospecting by courses of lectures and other means. Assistance should be given to those who become qualified in this work.

The Executive has become impressed with the need for disseminating in other countries, notably England, the United States and Canada, more knowledge of this country and its business, and to counteract as far as possible some of the adverse publicity given by ill-

considered articles that have been written by roving individuals visiting here.

While we are not without appreciation of the great deal of helpful writings that have gone abroad, there have been too often articles appearing in leading publications dealing in a sensational manner with very limited phases of our country's life. To offset that influence as far as it may, we are now engaged in the compilation of an informative booklet dealing with the country's resources as far as is known and emphasizing the industrial progress being made. This publication will be widely distributed abroad through business organizations.

To make the country better known abroad is of paramount importance, and when the time is opportune we should like to see organized business groups come to Newfoundland under the sponsorship of the Government, of trade organizations, and of this body. In line with this suggestion I might say that an offer was made to me by a very influential source in the United States to organize a cruise to Newfoundland of representatives of trade organizations in the United States. While, under war conditions, this may not be feasible at the moment, it should not be lost sight of when the opportunity offers.

Negotiations are proceeding with the West Newfoundland Association for active and constant collaboration with our Board for the examination and promotion of industrial projects, and for the discussion of mutual problems.

The example set by the progressive leaders on the West Coast in creating their association is one which we feel should be followed in other sections of the country. Apropos of this the Newfoundland Industrial Development Board distributed to individuals throughout the country a questionnaire for the purpose of eliciting ideas of what could be done in their neighbourhood. Several

hundred replies were received which demonstrated an active interest in community problems.

An obvious handicap is the lack of business men's organizations which can deal with local problems in a progressive way. The Board feels that there is an urgent need for associations of business men following the example of the West Coast to be set up in convenient areas such as Burin Peninsula, Conception Bay, Bonavista Peninsula, Notre Dame Bay and other sections.

If there were many such organizations actively engaged in seeking out labour-giving opportunities for their particular sections, the leadership and concentration which today are lacking would be provided.

It requires no great stretch of imagination to appreciate the value of such organizations, which could be represented at an annual conference in which the Newfoundland Industrial Development Board and the Newfoundland Board of Trade could participate. Our Board is willing to lend assistance for the organization of such bodies, but the movement should originate in the various areas.

With the experience gained in two years of operation we are impressed very much with the need for closer relations between the Board and the departments of Government. The objectives which we are pursuing can only be obtained by the use of facts with regard to the trade and resources of the country that are to a more or less degree available only through departmental channels.

The success of this Board, as I have stated, depends largely on the use of facts and, while we appreciate the co-operation we have received in many directions, we would like still closer relations for this purpose with such departments as the Fisheries Board, the Tourist Board, the Forestry Division, the Geological Division and the Statistical Department.

The purpose of our existence is to assist in the promotion and extension of labour-giving enterprises, and we feel it is realized that the Newfoundland Industrial Development Board in the field of business promotion is complementary to all departments of Government.

Our Secretary has been in touch with the Inter-American Development Commission through their Executive Office in Washington, concerning the extension to this country of the advantages of their movement to promote Western Hemisphere Industrial Development.

This organization comprises twenty-one American Republics, and recently these Republics unanimously recommended that Canada be included in this group. We have been informed that Newfoundland's inclusion would, upon request, receive consideration and in the meantime we have been promised that the benefit of the Commission's experience in the development of handicrafts and other industries will be made available to us.

The Inter-American Development Commission is headed by Nelson A. Rockefeller, and the executive comprises representatives of the several American Republics.

A good deal can be learned from industrial planning organizations in other countries with objectives similar to ours and the Board is arranging to keep in close touch with such bodies. In the near future the Secretary will pay a visit to the New Hampshire State Planning and Development Commission. The Industrial Branch of that organization has had a large measure of success in bringing small industries into being. New Hampshire being one of the smaller states, its problems are more akin to ours than some of the more populous centres. The Branch has offered us the benefit of its experiences and has extended an invitation to us to study its operations.

A disturbing factor at this time is the planned movement of large numbers of our men and women to Canada

and the United States to take up employment. Naturally if this country cannot provide the opportunities for lucrative employment which can be obtained abroad such a movement is logical and understandable.

It cannot be overlooked, however, that such an emigration by those who cannot find employment at home must indubitably add to the burden of the maintaining of educational, social and public services for those who remain. These services will not decline in cost but fewer people will be left to pay for them out of their labours.

The Board is making an earnest effort under difficult wartime conditions to explore and develop avenues of employment which otherwise might not be brought to light. We feel we are developing a field of usefulness of increasing value which we hope will be of considerable help particularly in meeting the debt we owe to our men in the armed forces when they return and seek employment.

ADDRESS

*Delivered by the President Mr. C. C. Pratt, at the Annual
Meeting, September 20, 1945*

While a review of the activities of the Newfoundland Industrial Development Board for the past year reveals nothing of a spectacular nature, I feel it safe to say that it provides ample demonstration of the Board's field of usefulness. In spite of the anticipated and fully realized difficulties of functioning during a period of war-time controls, the Board has made some progress.

In the first report after its inauguration it was pointed out that the odds were stacked against reaching its objectives in the promotion of peace-time industry. It was realized that public recognition of the Board's value, as judged from any concrete results achieved during the war, would be meagre. Less confidence in its ultimate usefulness would have dictated postponement of the movement. I feel there has been justification for the decision to lay the foundation of the organization even during the period when war materials were given strict priority over industrial needs and ordinary industrial expansion was frowned upon.

During the past three years we have, by investigation and contacts, uncovered many opportunities which, it is hoped, will be used to enlarge our avenues of employment in the future. In addition to that, as the Secretary's report reveals, some specific industries of promise have definitely been set up. Others of importance are being studied by interested parties and as the result of representations made by the Board, two very responsible persons from abroad were quite recently in the country investigating

two different projects, which we are not at liberty to disclose. In addition, our facilities have rendered assistance in the enlargement of some existing undertakings.

There is evidence, in the capital investment in cold storage operations, herring meal and oil plants, mining, industrial plants, new vessels, etc., that local business men are prepared to extend substantially their investment in the country. Some of the greater profits made by reason of the increased war-time trade are finding their way into an extension and modernizing of industry. During the past three years, private capital to the amount of over three million dollars has been spent on fish and fish oil plants and new locally operated vessels. Most of these particular investments have been made outside the influence of this Board.

While the methods of preparation of certain fishery products have been modernized, very little has been done to improve actual production methods. Unfortunately, to a great extent we lost the opportunities of doing so during the war when the demand for the product was almost unlimited. But one thing we can be very sure of, unless the per capita production of fish is very much increased by such improved methods of catching as will lessen the unit cost, Newfoundland fishermen will not, in the competitive era ahead, enjoy the standard of living to which the prolific fish supply in our waters entitles them. This point needs no further emphasis than to say that of the total engaged at the codfishery, eighty-six per cent are inshore fishermen and last year averaged only thirty-five quintals of codfish. This is apart from the much smaller quantities sold to the filleting plants. The others who fished from schooners averaged sixty-six quintals, which in itself is small compared with the deep sea fishing operations of other countries.

It is obvious that costs generally in this country are out of proportion to sound economy. Industry and labour

should combine to reduce costs by improved methods, greater efficiency and more production per man hour, if we are to make the progress that we should. I cannot think of a more useful subject for official and independent investigation, designed to ascertain the true facts and recommend measures of relief.

The cost of living is the greatest single deterrent to progress in Newfoundland. With our index currently at 165, as against 100 in 1939, the rise in the cost of living naturally has to be reflected in production costs in every phase of local enterprise. It creates a vicious spiral, affecting the fishery, building trades, industrial projects, distribution and public administration, in fact our whole economic and industrial life.

With almost dramatic suddenness our thoughts have been turned from the realm of speculation and theory on post war problems to immediate and urgent needs. Practically no industrial problems existed in the years of war. On looking back at even this short range we can sense, after the period of prosperity, an individual unpreparedness for the more difficult times immediately ahead. The fact that this condition appears to be universal does not lighten our individual responsibility. It happens that at present with the short fishing season providing fully for a year's needs, fewer berries are picked for export, some banking crews end their voyages earlier than usual in the midst of good fishing, and in many instances family labour for fish making is not available. When money was coming in from full employment on the construction of bases, it may have seemed unnecessary to make in the home or grow in the garden plot that which could be bought in the shop. Holding a job has sometimes appeared to be less important to the individual than previously. Times like those we have experienced have the tendency to throw people off their guard, and in this respect there is no distinction between those in business and the primary

producer. The urgency of exploring new avenues of earnings and practising thrift is apt to be overlooked at such times.

It requires no great foresight to see that only by the utmost initiative, industry and thrift can we hope to cope successfully with the uncertainty of the future. We need to seek out more diligently our potential resources and more comprehensively plan to use them. On the other hand, I always feel that thinking in terms of the country is impractical and must bring unnecessary disappointments. It has become a popular habit to overlook the bright spots near at hand while we search the horizon for signs of unclouded sunshine. No plans can be devised that will completely provide for the economic needs of a country. New problems are constantly arising and the nature of old ones is continually changing. Take for instance the future problem created by the recent influx of people from the outports into St. John's. The earnings of the city are almost wholly dependent upon the wealth from fisheries, forests, mines and agricultural activities outside. Newfoundland needs to increase the number of primary producers but the present inclination of people is in the opposite direction. The trend will be towards a lessening of the relative importance of St. John's as a distributing centre for imports of goods and exports of fish. Every effort should be made to increase industries in and around the city to take up the slack.

Notwithstanding so many adverse features, which it would be foolish to hide from ourselves, I do feel that we should not submit to discouragement, and that defeatism should have no place. The past few years have shown progress in certain fundamentals, among which I may mention, a higher appreciation of the value of education, a public consciousness of the equity found in social and labour legislation and improved social services, a development of the spirit of self-help, as demonstrated by the

growth of producers' co-operatives and study clubs and the slow but, I think, sure growth of town council sentiment. The associations for area advancement such as have sprung up on the West Coast and in central Newfoundland are not without significance. I think I may modestly claim that the Newfoundland Industrial Development Board represents another sign of the times which one would not readily visualize, say ten years ago.

On the purely industrial side we are making progress, although on every hand there is, not unnaturally, an impatience at the rate of progress. The belated but now rapidly continuing diversification of our fishing industry must surely act as a cushion against a repetition of the periodical slump in the salt fish trade. This is the most outstanding feature of encouragement, and around it, subsidiary industries will inevitably be built. One sees a greater interest in land development than in the past. Our paper industries forecast a period of good demand for their product and are contributing to the general good by seeking to establish auxiliary lines of manufacture. A progressive tourist plan, extensive road construction and the turning of more of our wasted water flow into electric power would add tremendously to our future security.

Another side of the picture, of course, is that after the cataclysm of war, world conditions of finance and commerce may upset our expectations. Depending as we do so greatly upon our export trade we are particularly vulnerable to such conditions. A revolution in Spain once deprived us of 15% of our fish distribution in a single year; a new tariff in Brazil once cut that country's imports of codfish in half; development of national fisheries in the Iberian Peninsula or elsewhere will affect us in varying degrees; our high hopes for frozen fish can be shattered by changing tariff sentiment in the United States, and so it goes. That vulnerability can be materially lessened by reducing our imports through producing and preserv-

ing more foods, by local manufactures and by more self-sufficiency and the development of homecrafts and handicrafts. In these spheres the Board's activities are noted in the Secretary's report. A countrywide campaign should be carried on continuously through press and radio to direct attention to this all-important phase of our economy. The measure of security for the livelihood of our people depends on arriving at an adequate ratio of internal trade with exports, a point which, I feel, does not receive enough emphasis in the plethora of ideas brought out in discussions of our future.

As a matter of future policy for our Board, the Executive have given considerable thought to a plan which might enable us to command intimately and thoroughly the services of specially trained industrial investigators in various fields of inquiry. Such a plan would be designed to keep us constantly up-to-date with the tremendous changes that industrial research is making in the countless processes of manufacture and uses of materials which would be applicable to this country.

Industrial research has been greatly intensified during the past five years and this demands that an organization such as ours keep in closest touch with developments. We need to introduce such developments into our industries at the earliest moment so as to derive whatever benefits are forthcoming.

The former Commissioner for Natural Resources, Hon. P. D. H. Dunn, and I interviewed some outstanding industrial consultant houses in the United States, for the purpose of determining whether we would be on solid ground in contracting for a service, which would provide something of a sponsorship for industrial investigations and promotion. I am convinced that there is a great deal to recommend this policy but it is unquestionably necessary, as a prerequisite to such a step, that the Board have an adequate and trained staff under its own control. In

the experience of organizations abroad similar to ours, specialized training of staff plays an important part. During the past year the Executive have made every effort to engage a man with the required training but without success.

The Board has always wished to get men for this work who have knowledge of local conditions. It is hoped that, with the release of men from war activities, selections can soon be made, and inquiries are now being carried on with industrial development organizations abroad to have them accept prospective candidates on their staffs for training. This is a slow, but, we hope, sure way of progress. It is hoped that young men acquainted with the major fields of local industry can be selected and trained to give a lead within the organization in promoting industrial life.

I must not close without paying a very sincere tribute to our Secretary, Mr. Harnum, for his faithful and efficient work in a most trying period and also to express my admiration for the loyal service of the Executive who have given freely of their time and experience throughout the year.

ADDRESS

*Delivered by the President Mr. C. C. Pratt, at the Annual
Meeting, October, 29, 1946*

The report of the Director and Secretary which has just been presented deals with the activities of the Board in as much detail as, perhaps, is necessary on this occasion.

I would like to take this opportunity to express my personal appreciation of the earnest endeavour of both these officials, who have carried on under difficult circumstances, and have taken both disappointments and success in their stride.

It cannot be denied that, even under the difficult conditions prevailing since its inception, and still prevailing, by actual results and prospects opening out, the Newfoundland Industrial Development Board is destined to serve a useful purpose in the economy of our country. It makes no bid for popularity by self advertising or destructive criticism, but, with constructive thought and energy, endeavours to add to the sum total of Newfoundland's industrial opportunities. If at times we may be disappointed in the size of the figures which we add up to make the sum total, it is worth remembering that they are all on the credit side of the ledger.

Newfoundland is being caught up in the swirl of inflation which, unfortunately, it is powerless to control or materially influence. Being so entirely dependent on the outside work for our livelihood and welfare, we are apt to be tossed around by "chop" seas at this time, but it is essential that we hold fast to what supports we have. One of these supports, although already strained, is cost

of production. If that gets out of hand we are lost. High cost of essentials of life must inevitably have an effect on the cost of production and services, but how serious that will be depends on the willingness of us all, in this crisis, to give the maximum returns whether in the fishing boat, at the desk, or at the lathe, for each dollar paid.

There is a very grave danger of an unsettlement of our economy in the immediate future by higher and higher costs, both in industry and, what is hardly less important, in public service, with no possibility of higher and higher values for our exports, which in the last analysis, have to pay for all. In this connection we are much more vulnerable than countries of greater self contained economy.

It has become increasingly apparent to the members of the Board who, in the past four years, have given a great deal of study to the various aspects of Newfoundland industry, that we are greatly lacking in knowledge of certain fundamental factors on which an appraisal of opportunities can be based. Time and again the Board has stressed the need for information which only adequate surveys of our industrial potentials can provide. To illustrate, Labrador itself remains a closed book, as far as information as to what it can be made to yield is concerned. The available statistics on almost every phase of the country's economy, if we except the improved fishery tabulations, are hopelessly inadequate. Furthermore, the uncertainty of the political status of Newfoundland, while presently unavoidable, is having a deterring effect on industrial advancement.

National Convention

The Newfoundland National Convention has an opportunity of preparing the road for the future, but if, in pursuing its function to assist the country to determine constitutional issues, it does not adequately and scientifically study the essentials of economic and social progress,

I think its efforts may bring inadequate, if not unfortunate results. I realize that this statement has been made, in its substance, by every member of the Convention. There is always value in repetition of a fundamental fact. I am sure the people of Newfoundland are impressed with the earnestness with which their elected representatives have tackled their trying task. They have announced their desire for the assistance of the public in the gathering of facts and views to help them in their deliberations and their decisions.

With that in mind, I feel that it is not inappropriate, through this body, set up for the express purpose of stimulating industry, to offer a suggestion for the consideration of the members of the Convention in the matter of policy and procedure. I present it to you for your consideration before submitting it to the National Convention.

I take the liberty of repeating that, in my opinion, one of the greatest opportunities in Newfoundland's history will be lost if decisions bearing on our political future are made without the most intimate and professional study of the country's economy. Although recognising that in the membership of the Convention there is a cross section of talent and ability of Newfoundlanders in many walks of life, I feel that it is necessary to probe deeper and search wider for a thorough appraisal of the worth of Newfoundland, actual and potential, than is possible by sitting committees of the Convention. I feel, further, that the tying-in of the innumerable economic, social and other factors with various alternative forms of Government for the greatest lasting good is a highly complex matter and requires special treatment. Before particularizing on that point, I would like to take a short while to state some of the things I think a study made for the Convention should embrace.

1. An analysis of the present state of industrial development in Newfoundland, the direction and rate at which industries might be developed. Possible development of business and industry which does not exist at present but which may be feasible and which is needed to support the total economy. A searching out of the industrial developments that have occurred in other countries having characteristics similar to Newfoundland. I fully realize that the time available cannot do full justice to this particular part of the programme but, co-incident with a thorough examination of the available data, measures to insure a continuation of collection of new material can be provided.

2. An examination of the value to Newfoundland of its facilities and strategic position on air travel and the policy to be pursued with regard to international civil aviation conferences and agreements.

3. An analysis of the present social service and labour security measures, a study of the present and future requirements of such measures, a consideration of the amount of social service that the financial structure of the country will stand and which may be possible under suggested forms of Government.

4. An analysis of the amount of public investment which is possible under present financial conditions, and recommendations as to the types of future public works which might stimulate private enterprise to the maximum. This study would not only include, among other subjects, the possible construction of roads, and the development of rural electrification but would also appraise the need for Government sponsorship of industrial and agricultural research and education.

5. An analysis of the bearing of the country's tariff and trade policy on the economy and standard of living of the people. This study would include reference to the

external economic policy of Newfoundland which would best promote a healthy balance of payments.

6. An analysis of Government expenditure, revenues and tax structure of Newfoundland and the effect that the present structure has upon business and social life. This study would also include the type of tax structure and the income which would probably result, depending upon the form of Government chosen by the people of Newfoundland.

7. An analysis of the banking and currency system now in effect in Newfoundland, local and foreign transportation and communications and their possible development and their bearing on the economy of Newfoundland at present and in the foreseeable future.

8. An analysis of the significance to Newfoundland exports and economy generally of the International conferences and agreements aimed at stabilization of currencies and extension of world trade. Consideration should be given to the relation of Newfoundland to the numerous actual and prospective agencies for the purpose of international economic and social progress. In view of the overpowering influence which international bodies may have in the future, it should be carefully considered how Newfoundland's needs and opportunities can best be served under alternative forms of Government.

It is obvious, I am sure, that no Convention of publicly elected members could be expected to cover these matters thoroughly without investigators trained in the various fields indicated. I would amplify the above points by making these further observations.

After all the essential facts are gathered the survey should aim to indicate the general direction for the development of the resources and economy of Newfoundland. Obviously, this survey would not be able to establish a blueprint of the future but would suggest

mechanics for progress to this end. This plan would embody positive recommendations for Newfoundland's economic development that would be helpful in charting the course of the country, whatever political status is finally adopted.

I would visualize that there would be set forth a statement of advantages and disadvantages which would result from each of the forms of Government which may be recommended to the people of the country. This study would include changes in the tax structure of Newfoundland, which would probably take place under various forms of Government, the amount of revenue which could be anticipated, a comparative statement of the social benefits which could be afforded, and the implications that the various forms of Government would have upon the country's external and internal economic relations.

What I have already said deals with the suggestions of the broad policy of the National Convention. I would now offer a suggestion as to how that policy could be properly pursued. As I have already stated, these studies require the services of specialists in the various fields. There are organizations abroad whose business it is to make such studies, and to offer definite recommendations and alternative recommendations based on the facts considered and in the light of their own broad experience. It seems proper that an organization of this type should be sought out and its services obtained for the Convention, and that it should be selected, if possible, in the United States, so that there will be no question in the mind of anyone as to its complete impartiality. There is abundant precedent for such services. To illustrate this I would say that I know of one organization, very eminent in its field, which, apart from Governmental and public assignments in its own country, the United States, has been engaged by a chief city of Canada to re-organize its fin-

ancial programme and has been used in a similar manner by at least two of the Canadian provinces.

While the scope of enquiry envisaged here will not fall within the range of any one organization, it is usual in such circumstances for the contracting organization to take full responsibility for the undertaking, to engage other competent specialists and to collate the work and recommendations of all.

I have taken the liberty of bringing out these suggestions on this occasion, in order to get your views on the practicability of the approach to a problem which is everyone's concern. In anticipation that these thoughts will receive serious consideration, I will state what I consider may be the necessary procedure to give effect to the suggestions I have made.

1. A committee of the National Convention should be set up to investigate the qualified professional services that could be obtained to assist them in the way outlined.

2. If the Convention should be satisfied of the need and value of such investigation, then the Commission of Government should be asked to vote the necessary funds for the purpose and to give assurance that there will be fullest co-operation from all departments of the Government.

3. The Convention should appoint a committee of its members to sit while the study is taking place, so as to keep in close touch with the investigators.

Before closing, I would like to offer to our Second Vice-President, Hon. Mr. Justice Fox, heartiest congratulations on his high appointment as Chairman of the Newfoundland National Convention. I am sure I express the sentiments of all our members when I wish him the greatest success in this important office. Due to pressure of his duties, we have recently been deprived of his

presence at our meetings. Because of his Chairmanship of the National Convention, it should be stated that he has no identification with or knowledge of the subject matter of this address.

ADDRESS

*Delivered by the President, Mr. C. C. Pratt, at the Annual
Meeting, November 12, 1947*

The Board has now completed five years of operation, so this talk will be of its work in general, rather than an annual review. It started with a five year tenure of office for its members as provided by the Articles of Incorporation. A new lease of life has now been granted to it by the generous and public spirited subscribers and by the Commission of Government.

During the war years the lack of opportunity for industrial development enabled the Board to conserve its finances for use at more opportune times. I shall, later in this address, tell of the application of its surplus in the financial set-up for the future.

Not only did the subscribers give of their money, but many of them through their membership on the Board gave unstintingly of their services. I feel justified in paying special tribute to the Anglo-Newfoundland Company, Limited, and Bowater's (Nfld.) Pulp and Paper Mills, Ltd., for their constant interest displayed throughout the entire period.

The full-time staff of the Board consists of a Director and a Secretary-Treasurer, with stenographer assistants. In addition, a temporary part-time appointment was recently made of a Forestry Consultant. On many occasions special consultants were brought in on specific investigations.

That the Executive and members have worked hard and earnestly is revealed by the fact that in five years

two hundred and twelve meetings have been held and no less than ninety industrial subjects have been considered. These ninety subjects have by no means been exhausted; in fact some of them have been barely touched. They make a very interesting list.

In the matter of the fishing industry the Board has left that field in a large measure in the capable hands of the Newfoundland Fisheries Board, although it has been able to lend its aid in certain instances.

It is not my purpose to present a catalogue of achievements in this address. The annual published reports of the Director and Secretary have done that. Let me, however, present some sidelights on what it has done. At the same time I shall try to illustrate the procedure followed. There, again, I have to admit there is no such thing as a rigid procedure in this type of work. Matters are worked on that come from ideas originating in every conceivable way. Some arise from discussions at meetings, some from magazine and newspaper reports of undertakings elsewhere, others from inquiries from at home and abroad and many good leads come from contacts with similar organizations and research institutions in other countries.

There seems to be a growing conception that industrial advancements in a country can be according to blueprint, with progress charted point by point until the haven of full employment is reached and all problems of livelihood are solved. That is a fascinating study in a classroom, but it remains there, or spreads outside to build up false hopes. What seems settled to-day is unsettled to-morrow. The problems of life change daily. Do not misconstrue this remark. To deny planning and patient research would be to write off organized effort as useless.

The Newfoundland Industrial Development Board endeavours to add what it can to the sum total of indus-

trial advancement, by assisting people to solve industrial problems, by presenting new ideas of industry, and by building up a case for useful and profitable undertakings.

It may be of interest to trace the origin of some of these endeavours.

A man sent in a sample of material which he thought would be a basis for cement manufacture. The Board decided to investigate. Samples were gathered from various sources and sent away for analysis. The materials were excellent. However, one component part is on one side of the Island and another on the opposite side. To bring them together was out of the question. The cost of fuel has a direct bearing on this subject. A geological survey alone can determine the availability of materials in areas of promising development.

Plants established in Canada in war time for making alcohol from sulphite liquor became known to the Board. A world renowned authority was brought in at our expense. More than a million gallons of alcohol are said to run through the flumes of a paper mill in a year. The manufacture is entirely feasible, but there is no substantial domestic demand and the export market up to the present is not sufficiently attractive.

At an executive meeting one day it was decided to make fish canning a special consideration. Letters were written to every canning company in Canada and the United States. Of all replies, three showed an interest and one company asked for a representative of the Board to visit them. The Secretary immediately went there and spent a week giving them the local setting. A little later, one of their officials followed this up by coming to this country and conducted his investigations through the medium of the Fisheries Board. The result was the new herring canning plant at Bay of Islands.

The first and only plant devoted solely to the canning of codfish received its initial impetus from the Board.

A member of the Board, who had personally investigated some years previously the establishment of a creosoting plant, but dropped interest in it, passed his file on the subject to our staff. By public advertisement, inquiries were made for someone to take it up. Only one party displayed an interest and he was able to induce an American company to establish at Clarendville.

A near crisis in the fishing industry due to lack of motor engines was met by the Board, which interested a manufacturer in setting up an engine manufacturing plant in St. John's. Negotiations with the Government for initial encouragement were instituted by the Board and an industry of permanence came into being. Apart from the labour of that plant, the several hundred engines turned out must have had a substantial effect on the amount of fish produced.

The need for the enlargement of the good work carried on by Nonia and Jubilee Guilds was considered by the Executive. The Secretary went to Canada to investigate handicrafts. As a result, the late Mr. Oscar Beriou was engaged at the Board's expense to come to this country to advise on the movement. On his recommendation, the very fine and promising Handicraft centre was established in St. John's.

During the war the Board represented to the authorities the facilities of a leading company on the West Coast for ship repairing. As a result, a naval official went to England to present the case. From that effort ship repairing to the value of a quarter of a million dollars was done on the West Coast. The labour alone was \$175,000.00.

The need for a thorough water power survey was represented to the Department of Natural Resources. The whole position of unused water power rights was studied,

and recommendations, designed to provide certain corrections in the public interest, were made. Arising out of that study, the Government adopted the Board's suggestion for a long term hydrographic survey which is now in progress.

The case of a flour mill in Newfoundland was the subject of a very careful investigation in Canada and the United States. The files on this subject are available to anyone wishing to make an independent study.

Recently the Board brought in from England an eminently qualified person to study the prospects of a slate industry. This report is most encouraging. If the problems of transfer of funds and acquisition of the properties can be overcome an industry of consequence may be established.

I must not weary you with a continuation of this running commentary. I shall summarize only some of the subjects studied to illustrate variety. Some of these are written off as impracticable, others are under active negotiation, and some you will recognize as having been brought into existence through the efforts of the Board.

The complete list would include oxygen and acetylene manufacture, paper bags, clay and brick products, ship-building, utilization of birch, fox food, limestone export, gypsum, wallboard, matches, yeast from waste sulphite liquor, brewer's grain, charcoal, cardboard cartons for fish and other products, seaweeds, fertilizer and many others. Every one of those mentioned has been the subject of protracted study and correspondence, often with many different interests.

A recent proposal is for a competent appraisal of the possibility of Irish moss, a material which is worth over two hundred and fifty thousand dollars a year to Prince Edward Island alone.

The Board right now has what we believe is an attractive proposition requiring the utilization of birch. Investigation of this has cost the Board over one thousand dollars. We are now seeking someone to establish an industry which might run into several hundred thousand dollars per year and has definite promise of being profitable.

Arrangements were made for the services of the National Research Council of Canada to be available for Newfoundland interests on the same basis as Canadian industry. Wide publicity was given to this fact but, as far as can be learned, no one here has yet availed of the offer. Many millions of dollars are spent each year by that organization which helps Canadian industry solve their problems. The Board itself has found it very useful.

In preparation for the recent annual meeting which terminates five years operations, letters were sent to existing concerns who owed their origin to, or received indispensable assistance from the Board in their initiation. A condensation of the figures very willingly submitted but which, in individual cases have to be treated in confidence, reveals:

- (a) Total amount of new capital invested....\$1,071,500.00
- (b) Amount paid in wages to the end of
June, 1947 900,340.00
- (c) Approximate value of goods produced or
services rendered to June, 1947..... 1,512,900.00

Others, for possibly justifiable reasons, did not feel at liberty to furnish figures. Had they done so, the totals would be much more impressive.

It must be remembered that the returns to the country of most of these new industries are of a continuing character and that the value of the goods produced will be substantially increased when certain recently organized

industries have an opportunity of getting into greater production. In addition to this, subsidiary earnings, which cannot be tabulated, are undoubtedly of very material value.

Fifteen thousand copies of an illustrated information booklet were published and circulated. The response has been gratifying.

I would like to emphasize that the usefulness of the organization cannot by any means be judged simply in terms of new industries established. A growing feature of the Board's work is the service provided by responding to requests for advice and assistance to existing industry. Here again I would illustrate: Three firms were assisted in determining what was a suitable type of kiln for drying wood. Three such units were obtained. One of these has produced kiln dried wood to the value of \$200,000.00.

Assistance was given in obtaining a contract for a yacht to be built for an American sportsman.

A soft bread bakery was burnt down and, as a result of the Board's representation of the case, the baker was turning out bread a week later in a plant which, up to that time, had been operated by the Armed Forces.

A continuous correspondence goes on with organizations abroad concerning information on suitable types of machinery, processing methods, etc.

Institutions in England, the United States and Canada are learning of the Board and frequent inquiries about Newfoundland industry and products are coming from many unexpected sources.

These illustrations will suffice to convey the variety of services rendered without charge.

Now, what of the future?

Recently the Board has received an undertaking from

the Commission of Government that, subject to the concurrence of successor Governments, the annual contribution will be continued at \$12,500.00 a year. This carries with it the acceptance of the offer of the Board that it will raise by subscription a similar amount.

By careful nursing of its funds, the Board has built up its reserve to about \$40,000.00. This is a necessary stabilizing fund to be used for investigations and expenses of a non-recurring character. The annual budget is set at \$25,000.00. In any year that there is a surplus of income over expenditure, such surplus will be repaid pro rata to all subscribers for that year. In this way the reserve fund at any time will not exceed the set amount of \$40,000.00. This amount is not excessive to ensure permanence and permit progressive planning.

In embarking on a second period of five years the Executive feels that a need exists for a broadening of its membership in order to spread the responsibility for its success.

The old Board has, I trust, laid the foundation for an indispensable organization in the industrial life of our country. The officers and Executive have been re-elected largely en bloc each year. This is neither healthy nor proper. In conformity with the Act of Incorporation a new Board has been gazetted. During this year, upon recommendation of the Executive, invitations have been issued by the Commission of Government to representatives of the following to become members or to continue their membership:

Two representatives from local manufacturing industries.

One representative of Newfoundland Board of Trade.

One representative Bay of Islands Business Men's Association.

One representative Newfoundland Federation of Labour.

One representative Anglo-Newfoundland Development Co., Ltd.

One representative Bowater's (Nfld.) Pulp & Paper Mills, Ltd.

One representative Dominion Steel & Coal Co.

One representative Buchans Mining Co.

One representative Lumbering Industry.

One representative Fishing Industry.

One representative Vocational Training and Handicrafts.

One representative Transportation.

Twelve other representative citizens.

In addition, the Commissioner for Natural Resources is a member ex-officio. I am happy to report that out of twenty-four invitations sent out there was only one refusal and that because of ill health. The pioneers of this organization feel grateful and are encouraged by this splendid recognition of their work.

At the Board's expense eight qualified specialists were brought into the country for as many different industrial possibilities.

Again this question, what of the future? How easy it is to close one's eyes and imagine great things! It is significant that our imagination is always more vivid when we lie awake in bed, shut off from the practical affairs of life. In creating industries we cannot ignore the practical. Whether the idea is universally popular or not, industry must of itself be made to pay, for it is the promise of profitable returns that first brings industry into existence and, through profits, new capital is created for still further investment and resulting employment. In the last analysis, the measure of success in such work is determined by the willingness of industry and the public

here and abroad to invest in enterprises within this country.

The line of least resistance for an organization of this nature would be to advocate industries subsidized by public funds and place the blame elsewhere if industries are not started. This the Board has avoided. It must not be lost sight of, however, that in cases where employment of manpower is commensurate with the public cost Government assistance in one form or another may well be justified.

An organization such as this, to do its best, must have the interest and support of the public. About four years ago nearly one thousand questionnaires were circulated to selected citizens, asking for suggestions on industrial possibilities. Many replies were received but, unfortunately, not many could be used. A large proportion dealt with generalities or advocated public works which were outside the function of the Board.

A similar questionnaire will shortly be circulated again. I appeal to Newfoundlanders to co-operate with creative suggestions which will help the incoming Board to widen its field of industry and research. I hope it will not be regarded as presumptuous to say that there is too much said and written about what is not done. Let there be more talking and writing about what can be done in the country. Criticism of action or indeed of inaction is often a lazy man's refuge from the more arduous responsibility for creative thought and suggestions. The Board is set up as a clearing house for constructive ideas, why not use it?

Bear in mind, of course, that the Board cannot create an industry. It can, however, use an idea to the extent of studying its potentialities and rounding out a practical business approach to its promotion.

I do not know that I can say more of this Board than

that I feel that by patient effort it will leave no stone unturned to search out industrial opportunities and try to induce people to avail of them.

The field of search is immense. It is far wider than the financial capacity and personnel of this Board can cover, except over a long period of years, if ever.

We need faith in the future of our country—a faith that is buttressed by a knowledge that there will be justice and equality to producer, labour and capital in an improved economy. This is no time for a blind course which ignores the dangerous shoals that are undoubtedly ahead. An optimism that takes no account of a bankrupt world is fatal. Similarly, the Jeremiahs who prophecy that in the future we alone shall be ruined and bankrupt should be repudiated by a faith in our own endeavours. We shall certainly be beset with dangers and difficulties in the future, but, personally, I do not subscribe to the belief that they must inevitably bear harder on us than on others.

Government policy must inevitably play a large part in extension of employment. It should be geared to the encouragement of industry. Our main exports provide the basis for our economy but others draw off the cream and we retain the skimmed milk only if all the money is spent abroad instead of keeping as much as possible circulating in the country through local industry and greater home production.

I would end with this thought: Stability of government and public confidence in government are the first essentials of industrial progress in any country. At the moment, through force of circumstances, Newfoundland is in the throes of uncertainty as to the form of her future government. While that situation prevails, investment in industry will wait. It is unmistakably clear that it is waiting now far more than is generally realized. No time should be lost in putting our house in order.

ADDRESS

*Delivered by the President, Mr. C. C. Pratt, at the Annual
Meeting, November 30, 1948*

It is my privilege to speak as Chairman of the Newfoundland Industrial Development Board for the sixth time at its annual meetings.

Last year I reviewed the five year period which had then closed, and dwelt on the conditions under which the Board had been operating, its achievements as well as its disappointments, its war-time and immediate post-war-time efforts to help along the economic life of our country.

The Board has established itself as a clearing house for information on the industry and economy of the country, a fact which is now widely recognized abroad and availed of extensively in Newfoundland.

The recent political developments in this country have caused an hiatus in industrial progress during the past year, except in the major industries which are pursuing their long range programme uninterruptedly. The present extension of the paper industry is one of the bright spots in our economy and we are fortunate in having located here two companies which are as efficient and progressive as can be found anywhere in the world and whose outlook on Newfoundland and its people is liberal and helpful.

There is a note of progress in the fishing industry, especially in the field of processed fish, which reflects great credit on the companies that have brought these operations through the risks and pains of the pioneering stage up to the sound position they now occupy. While

their value to the life of our country may not be fully recognized at present, future generations, I believe, will look back to the years of the nineteen forties as the turning point of the century from a static fishing industry to one of increasing vitality and progress.

The mines have been operating at a high level of output. Our whole export trade is now enjoying unprecedented activity.

The fact is not generally appreciated that no matter how prosperous export industries may be, no country can have a satisfying economy and high standard of living of general application to the whole population, by exporting only to import. Our standard of living will only be made satisfying by the fullest possible measure of production for local needs. Money earned in one industry and circulated to employ people in another industry within the country, rather than used to creat employment in other countries, is essential to a well rounded economy. We are in the habit of calling all undertakings, except those for export, secondary industries and so they may rightly be termed in the order of importance, but nothing that gives employment on sound and economic lines should be relegated to a second place in our thoughts and plans.

It is to be hoped that, whatever the impending changes in our political status may bring, we will be assured that an adequate foundation will be laid for confidence and for the maintenance and promotion of employment agencies designed to increase home production and thus lessen our dependence on importations for the necessities of life. In a country with great limitations on agricultural growth, our need for a liberal attitude towards manufacturing industries is all the greater, because of those deficiencies. We need to get away from the thought that the road to progress lies only in the establishment of large industries. Self help in our com-

munities, large and small, and indeed in our family circles, is an essential factor in improving the lot of our whole population. Every household in Newfoundland with land to use should be encouraged to grow more peas, more spinach, a greater variety of vegetables and fruits, and more of these products should be home processed, thus cutting down the quantity that is grown and packaged for us by the people of the State of Maine or the Province of Ontario. There is no reason why potatoes, turnips and cabbage should hold a monopoly of our soil. We should have more cows and goats and hens in areas where land is available to the average home and we should use less milk in tins and eggs imported from a thousand miles away.

As an example, one million dozen eggs, two million pounds of processed milk and three million pounds of canned peas and beans are far too much for three hundred thousand people to import and still have an adequate standard of living.

Our short and uncertain growing season and our indifferent soil in most sections reduce our self containment, but that makes it all the more necessary to use to the utmost the possibilities of growth which we have.

These are among the things I have in mind when I say we must seek to be more self contained by increased growth and manufacture, if we are to improve materially our standard of living.

Many of us remember that years ago agricultural societies were formed in many sections of the country and showed promise of doing a great deal of good. That was a good idea which failed for lack of vigour and of sustained leadership.

Right now is the time to institute a plan of campaign in this direction, whereby through instruction, organization, competitive displays, facilities for obtaining con-

tainers for home processing and in other ways we may create the incentive for self-help. In those days, the agricultural societies to which I refer did not have the benefit of publicity by radio which can be of inestimable value.

Here is a field of endeavour eminently suited to the co-operative societies now established throughout the country. Many other forms of existing societies could also be used for the furtherance of this idea.

Reverting to the field of endeavour which is the special purpose for the life of this Board, that is, the development of our natural resources through industry, we have an urgent need to know more of what we have in this country to use. Much has been said and written, often without adequate thought, about our great natural resources. General statements about our great resources do not help much. Specific details of what we have and how to use them economically are what we need. Progress has been made in the survey of our water power potentials and in soil surveys. Geological survey parties are working to discover minerals, or at least to study formations which may help in the discovery of minerals. Some interest has been shown recently in the study of the movements and quantities of fish bodies, but we have only touched the fringe of what is required in these and many other directions.

I would like at this point to pass along a suggestion given to the Board by a highly qualified authority to the effect that prospectors' classes are organized in villages and small towns in Canada and do effective work.

By being made familiar with minerals through displays of samples and by instruction in prospecting methods their members have found many notable mineral deposits which otherwise might have gone unnoticed.

This Board, within its limited means, has conducted

some surveys which have been reported on in the yearly reports but a tremendous lot of spadework and fact finding has yet to be done before capital can step in and commence actual development.

This is an age when industry advances only in the path of scientific inquiry. The dense woods of confused thought about our resources still obscure us from outlining a clear path of progress.

During the next few years we shall undoubtedly be faced with many changing circumstances. There will be those changes brought about by political or governmental adjustments and readjustments from the presently high values occasioned by the abnormal circumstances of war and war preparedness. It must be assumed that high values will level off as time goes on. It is only by efficiency and high productivity that we can maintain our position in competitive world trade.

It is questionable how successfully we can meet the sterner competitive conditions which are ahead of us in the salt fish industry unless by improved and more modern methods of catching, the per capita catch of each fisherman is increased. Further, the costs of handling, transportation, packaging and other forms of expense in marketing are out of proportion to the returns to the fishermen, operating as they do with such a low average catch.

In a period when the cost of living is so abnormally high and the value of the dollar has shrunk to a degree that only with the most frugal economy can people of low earnings maintain themselves, we have a problem, easy of statement, but difficult of solution. Unfortunately we are caught up in a vicious spiral of advancing costs, without an adequate increase in the quantity and value of goods produced. I am aware that I am speaking in generalities, but even a statement in that form has its

place, if it stimulates our thought. One thing is obvious. We need high efficiency in industry and the highest possible productivity per man hour in whatever sphere we work. If industry and labour are not efficient, that, indivisible trio, labour, consumer and producer, suffer from a lessened purchasing power, no matter how wages and production values are made to vary. The history of highly developed countries has revealed that a higher standard of living inevitably follows greater mechanization and efficiency of industry.

I referred just now to the need for the encouragement and creation of incentive towards self-help throughout the country. I would like to pay tribute to the splendid home-craft institution which is doing such a fine work at the headquarters in St. John's and which provides training in one section of this field. This institution had its origin in this Board, we are happy to say. The training which is being received there could have great value in the tourist trade of this country if we eventually have the imagination and vigour to formulate and carry on over the years a dynamic tourist policy.

I personally believe that there are immense possibilities in this direction, particularly in catering to airborne tourists. A readymade opportunity exists at Gander Airport. Every time I pass through there I am struck with the lack of commercialization of that great meeting place of world travellers. In the sale of light products of Newfoundland origin such as novelties, books of views, home-craft work, etc., the possibilities have not even been scratched.

Here the laudable work of Nonia and the Jubilee Guilds should receive tremendous impetus. I question whether any point in the world with such a flow of people is regarded with such indifference to its commercial possibilities as is Gander Airport. This reference does not take into account the value of the tourist traffic to our country

from that great centre if roads and facilities in the nearby area were provided.

I feel that airborne tourist traffic has enough possibilities to make a marked impression on the economy of this island, if we have sufficient vision to take advantage of it.

The opening of roads from Gander Airport to nearby bays should result in thousands of tourists each year finding enjoyment in some of the most beautiful sections of Newfoundland. As one experienced traveller remarked recently, the greatest enjoyment you can give them is to take them out cod fishing. They will even bait the hooks for you and pay you for the privilege of doing so.

The problems of industry and of housing conditions in St. John's are acute. The two questions are interdependent—one stems from the other, the social from the economic. On the other hand, a bold approach is necessary in the case of the deplorable living conditions in sections of the city and a solution cannot wait on the slow progress and hazards of industrial growth. It is a matter of great social urgency and must be tackled by a strong public movement.

In this talk I have tried to give you some thoughts to stimulate ideas which may make for progress within our country. I have left the matter of the specific enterprises within the purview of this Board to be covered by the Director and Secretary in their reports. To find labour-giving opportunities and to use them requires patient searching, faith and hard work. We need in this country more development in a modern manner to keep our young men and women here. We need more scientific inquiry as to what we have got and how we can use it. We need a university which will educate young people in the local atmosphere and send them out with enquiring minds. We need capital that will be risked on fair chances.

We need the fullest possible measure of co-operation between industry and labour, which can only come about through mutual trust. We need a lively and clear interest, one in the other. We need a people who are not divided by lack of good will towards each other, whether they happen to live on the east coast or west coast, or north or south. It is only by self help and mutual help that we can progress.

And now, Gentlemen, I have left a personal reference to the last. I have been honoured by election to the office of Chairman for six consecutive years. Up to the present, I have been the only Chairman you have chosen. It has been a great pleasure and privilege to serve in that capacity and looking back I have a genuine sense of pride in having participated in the initiation of this organization.

During the years I have been in office, the relations between us have been just splendid. No one has shirked responsibilities but on the contrary, every one has been eager to do everything to advance the objects for which this body was created. Further, I can say very sincerely, I have never once seen the slightest indication that any member has ever given consideration to his own personal interests in the matters that have come before the Board.

The work of the organization is of public character and that fact has been respected to the fullest degree. The weekly meetings of the directors have always been well attended. In fact, speaking from wide experience of service on Boards, the attendance and interest has ranked as high as any I have known. We all, knowingly, undertook a difficult task and in most trying times for this class of work, but the time taken from business and professional pursuits has always been given ungrudgingly.

The Director and Secretary have given of their best throughout and have done effective work. The experience which they have gathered, and continue to gather, is of great value to Newfoundland in this pioneering effort.

I feel, gentlemen, that this Board has one weakness. It does not make for the highest efficiency for a body of this nature not to rotate its officers.

I very definitely prefer to pass the Chairmanship over to some other member for the ensuing year. I make this statement not because of any weakening of interest, and the Board can avail of my service and fullest support in any other capacity it may wish.

The Newfoundland Industrial Development Board is engaged in an effort not covered by any other organization in the country. It follows a pattern approved and found indispensable to industrial progress throughout the United States, Canada and many other countries.

Given adequate public support it can do a great work here and I believe the foundation has been well laid for an effort that through the years will make a marked impression on the economic life of Newfoundland.

ADDRESS

*Delivered by the President, Mr. C. C. Pratt, at the
Annual Meeting, December 13, 1949*

The Newfoundland Industrial Development Board has just ended its seventh year of operations. In that period we had tragic years of war which brought a high degree of employment and material prosperity largely caused by the construction of military bases. While other countries had great extensions of manufacturing industry, convertible to peacetime uses, we were unable to avail of, in any substantial measure, that permanent push ahead which has given the Dominion of Canada, as a whole, a gigantic industrial impetus.

Then came a short period of industrial promise in which the Board did some quite effective work, but that was quickly followed by exchange difficulties which frustrated some promising undertakings. During the past year or two the political uncertainty had caused an almost complete absence of interest in new industrial undertakings.

Bewilderment

Following the bewilderment occasioned by an unprecedented number of political campaigns, a most important task of statesmanship is to recreate confidence in industry and commerce which has been badly shattered by the distrust and animosities engendered. For the past two years politics has been our chief preoccupation, but it never has and never will put bread on the table or shoes on the feet. Only employment through industry can do that permanently and effectively.

During the past few months we have become a province of a great and wealthy Dominion. The change has brought both its problems and its benefits. The problems in certain industries are difficult but we hope do not defy solution. It would be unfair to say that these problems are not sympathetically regarded. A hopeful sign is that they have been carefully and personally studied by men of cabinet rank and by high officials of the Federal Government, and there is every evidence of earnestness and goodwill.

Special Treatment

Any disruption of employment, whether in so called secondary industries or in fields of whatever designation, is particularly serious at this time and should call for treatment by Federal authorities. To my mind, we have heard too much of the Provincial pattern as applying to our country at this stage. Our economy has its own particular pattern, and it certainly is not that of the Dominion of Canada which has taken generations of confederation to weave. You will understand that I refer particularly to a pattern of assistance to industries which came into being and lived under an extremely different set of conditions than prevail here to-day. In fact, a rigid adherence to pattern in the adjustment years of Confederation can undermine our future as a province. An outstanding illustration of the need for special treatment is provided by our salt fish industry. Without European markets that industry faces absolute ruin. Most of these countries cannot provide dollars for fish purchases. I am aware that countless industries in the Dominion are badly affected by the shortage of dollars from world markets, but it is useful to point out that no province of Canada will have such devastation wrought amongst so large a section of its population by inability to market their export products, as will Newfoundland if we cannot maintain our traditional fish trade in Europe. Even the Prairie

provinces, with their great dependence on wheat crops, can find within the Dominion, a market for half their production and they have a crop which can be carried over as a surplus to buttress their industry against failing crop years. With us, however, we have a perishable commodity that must be sold and consumed within one season. If our salt fish industry declines, that industry in the Maritimes will be similarly affected, although it is of lesser relative importance to the total economy of those areas. The pattern of Federal Government financial aid to carry over surplus output does not apply here. Hence the necessity of safeguarding the livelihood of a community with approximately half its population deriving its earnings directly from the sea. If the industry is to survive, a long term policy must be worked out and made known to our people in the near future. Newfoundland had its own industrial pattern for generations—not too perfect a pattern it is true—but the fact is that it was an economy developed out of our needs and circumstances and had no part in the inter-provincial trade of the Dominion. The point I want to emphasize here is that amongst our industrial problems which require special treatment, the maintenance of our European markets for codfish is of first importance in this time of world upheaval. While we did not have these safeguards in the terms of confederation, it is none the less the moral duty of the Federal Government to shape its policy toward this country without keeping too close an eye on what it can do or cannot do for other industries of lesser importance or of different circumstances scattered throughout the whole Dominion.

Union Benefits

Confederation, has of course brought its benefits, which we should view in tempered and proper perspective. In the sphere of public works, large Federal expenditures are impending which are all to the good, but do not let us confuse these benefits with those of industry. They

are temporary in their nature, as was the construction of military bases, and do not lay a foundation for continued livelihood, except insofar as they assist future industry. Likewise, social security and welfare benefits, while of immense value and of a measure which this country as an independent unit could not afford, might take us off our guard. If we regard them as substitutes for productive work and if it becomes more difficult, as is currently reported, to get fish cured and blueberries picked, or indeed, if people buy in the store what can be made in the home, our standard of living will dwindle accordingly, family allowances notwithstanding.

Disquietude In Future

The immediate future outlook for industry in this country is full of disquietude. It is a habit—pleasant if valueless—for speakers to strike a note of optimism. No one likes a pessimist; generally he is in an unpleasant sort of fellow. Yet, this is a time for realistic thinking and realistic talking.

Our manufacturing industries producing goods for local consumption have distributed about five and a half million dollars in wages and services per year. In the days of the revenue tariff under which they operated, they were blamed for the high cost of living and were viciously attacked in certain quarters. The fact was lost sight of that, on many lines of imported goods of essential character which were not made in this country, the duties, maintained for revenue purposes, were higher than on the articles made by our factories. A careful estimate revealed to me that local factories operated in a field represented by only sixteen percent of our importations. Within that percentage was included the value of similar goods made outside the country. That, however, is past history. Those industries need the support of the buying public and sympathetic treatment by Government.

We are in the habit of thinking of our exports as holding the key to our prosperity. This is quite true to a point. Nevertheless, we drift to an alarming degree on the changing winds and tides of export trade.

The whole Dominion, which is one of the leading export countries of the world, has a ratio of 24.5% of export trade to the total national income. Taking one hundred and twenty million dollars, which is the figure used by the Dominion Bureau of Statistics, as an estimate of the recent gross national income of Newfoundland, one finds that the percentage of exports from this country is sixty-seven percent. This, perhaps, is the highest of any country in the world. The ratio of imports into the Dominion of Canada to total national income is 20.6% while our imports last year were 87.5%, accepting 120 million dollars as the approximate national income.

Greater Measure of Self-Government

The point I want to make is this. We need to strive for a greater measure of self containment as a province if we are to raise our standard of living. Our soil is not rich compared with agricultural countries with their great grain crops, and our climate is not conducive to wide variety of growth. This, however, makes it all the more necessary to use our gardens, looms and sewing machines to the fullest extent possible.

We are a country of small producers, except for the great paper industries and our two mines. In our domestic trade that is inevitable, but it is all to the good if we multiply and intensify our efforts. In our export trade, and particularly in that of the salt codfish industry, small per capita production is fatal to a reasonable earning power per man. In 1948 we had 1,265 men employed in deep sea fishery with an average catch of 114 cwts. per man. Our Labrador fishery employed on vessels 1,140 men averaging 92.3 cwts. and on the Labrador Shore 2,450

men were engaged whose average production was 33 cwts. 23,145 men reported as engaged in inshore fishery averaging only 26.3 cwts. each. To this we might add 10% or so for codfish processed in other forms. The average production of salt codfish by those engaged in the industry was only 33.5 qtls. This result reveals, in changing areas, blank, fair, and, here and there, good fishing by local standards. By the way, in these figures lies the reason for the inevitable and vicious credit system which spans the good and bad years in varying localities.

While on the subject, it may be of interest to present some facts concerning the European fishing on the Grand Banks.

This is, as you know, engaged in by Portuguese, Spanish and French fleets. The Portuguese are the most highly organized at present. This year they have forty-seven large motor ships dory fishing with 2,020 men, and seventeen trawlers with 1,136 men. Their total production is estimated to average 175 cwts. (dry weight) per man; indeed their trawlers have a per capita capacity of 280 cwts. per man. Compare this with our fishermen's total average of 33.5 cwts. of salt fish.

Recent and impending additions to the French fleet of many large trawlers, as well as the increasing Spanish participation, indicate that in the near future these European operations, employing approximately 6,000 men, will be able to produce in excess of one and a half times the quantity caught by our 28,000 men.

My excuse for this digression is to show the need for keeping more in step with modern production methods. I am glad that our Provincial Government has indicated a line of thought in this direction. It is important, however, to accelerate the development of other methods of curing because no considerable expansion of salt codfish markets can be visualized.

The recent speech to the House of Commons of Hon. R. W. Mayhew, Minister of Fisheries, revealed a grasp of the essentials to the progress of the fishing industry of Canada. From a long term point of view it can be taken by us as a most encouraging statement. Our thousand fishing settlements, however, will, by reason of location, depend upon salted codfish as their main product for many years. The recurring social problem in those communities will turn into a catastrophe if the larger plans for modern processing and distribution are allowed to overshadow the need for assisting the orderly marketing of salted codfish in foreign countries.

Picked Up Tremendously

In recent years we have advanced greatly in processing methods and the improvement is still going on. In fish canning and in other directions the Newfoundland Industrial Development Board is glad to have been of some assistance. I personally believe that a very useful avenue of research is in the canning of codfish. This method of preservation of codfish in its natural state has not attracted popular demand. What seem to me more difficult problems than that have been overcome in modern processing of foods, and, in these days when people live largely out of cans, it would have a tremendous effect on our fishing industry if we could produce a taste-appealing article.

One very recent advancement is the export of fish offal in liquid form. Mr. C. A. Crosbie, by admirable enterprise, has proven the feasibility of this method and has the distinction of introducing here the second plant in the world for that process.

Promotion of industry is essentially a business matter and will be while the present economic system remains on the North American continent. We can fritter away our time and intellectual talent by idly speculating on means

other than those within the range of private enterprise to create avenues of livelihood for our people. Many ventures, proposed to this Board as worthy of investigation, do not have, in this country, the fundamentals of economical production and profitable marketing, and all the bolstering by state aid and other means will not make them successful industries. Some have to be ruled out by sheer weight of facts, others are border-line cases and, as such, help from the Government in one form or another may be warranted. It must be remembered, however, that Governments do not create industry—a wise Government policy will seek opportunities to stimulate and encourage, but the foundation must be laid in the confidence of profitable return for capital invested.

Work of Newfoundland Industrial Development Board

I would like now to refer particularly to the work and status of the Newfoundland Industrial Development Board. As to its work in detail I shall not trespass on the report of the Director and Secretary, except to say that a study of its undertakings and accomplishments by anyone interested will reveal that it has been a worthwhile effort. It has been far weaker on publicity than on results. For that, as Chairman, I offer no apology. If it had attempted to be spectacular it would have failed in its true function. It has done a lot of painstaking and valuable work which will live on and act as a foundation for greater accomplishment in the future.

Its results in new industries may be appraised in part by the fact that for each dollar of public funds spent by the Board, considerably over fifty dollars have been invested in the country on capital investment and productive value, of which about two million dollars was paid in labour. In surveys and analyses of potential undertakings upwards of one hundred substantial industrial possibilities have come under close examination, and detailed reports of many of them are available for future

use. Not the least valuable results have been in assistance rendered to and servicing of many forms of industry in which the identity of the Board for proper reasons has been withheld from public view.

The Industrial Survey of Newfoundland which this Board has been making during the past two years, using the export advice of Donald, Ross & Company of Montreal will shortly be completed and published. This will stand as a useful reference book and will be helpful in properly appraising the value and possibilities of Newfoundland industry. Coupled with this the recent investigation of the Research and Development Department of the Canadian National Railway made in co-operation with us will, when the results are available, be of interest and value.

In view of the fact that the future status of the Board is at present undefined and its continuance uncertain, I feel it is useful to place on record something of its inside history and background and also, if I may, I shall indulge in some reflections on an effort of this type.

Origin

The Board was originated by a number of citizens who felt they would like to give of their service and experience in assisting the industrial life of the country. This idea took root just before the last war when the earning power of our people was at a lamentably low ebb. Perhaps the sponsors were a bit too idealistic in their approach.

A Board of Trade exists to serve those engaged in trade, a manufacturers' association represents manufacturing industries as such, and a labour union is set up to advance the interest of workers in one trade or another. In the case of this Board, it had nobody of special interests motivating its endeavours. Notwithstanding that, its purposes were specific and highly useful in a field not being the particular concern of any other organization or

Government. The Commission of Government at the outset gave it corporate existence with reluctance because of the fact that those initiating it refused to have it what was tantamount to a department of Government. It was an express condition of the sponsors that voluntary contributions would be found for fifty per cent of its cost of operation, but it was clearly indicated at that time that it would be more desirable to Government if all the finances were supplied from public funds and thus have it directly under Government control. There was a feeling directly expressed that it might be usurping some of the functions of certain Government departments. The Board lived that down and proved its usefulness in a field not covered by any public department. In fact, as it went along it received a varying measure of departmental co-operation.

Present Status

Now then, as to its present status. The Provincial Government has set up a department and cabinet post for Industrial Development. It is obvious that a voluntarily supported organization must give place to one wholly financed from public funds in the same field.

I am not at all critical of the Government policy in this respect. It is indeed a hopeful sign that the industrial development programme should be placed on a higher level than has heretofore existed.

I claim, however, that a solid foundation of facts, procedure and contacts has been laid in the Newfoundland Industrial Development Board and that the training and experience of the permanent staff in this work should not be disregarded.

If lasting progress is to be made it must be along the path of constant and painstaking research and effort.

Seeking for the spectacular is a denial of all valuable experience in this type of work. True progress can only

be made by building from the ground. False hopes are the inevitable result of breezily predicting industries from the air.

The field of endeavour is far wider both in search of facts and promotion and extension of industry than has been covered or could be covered by this Board as constituted and financed.

Appreciation

I cannot close without an expression of my deep appreciation of the honour of being elected Chairman for every year since the inception of the Board. As you know, this has not been my wish, but I have continued to accept the office with the evidence of deep interest and co-operation of every member of the Executive and staff. It has been an interesting work, with enough discouragements to keep one in fighting trim. The encouragements have come through a fair measure of industries initiated and helped from the knowledge that a constant effort of this kind must bring cumulative benefits to our country. At this time I repeat the request made last year to be relieved of the post of Chairman and in doing so I can say that the confidence which has been placed in the Executive of the Board by members and other citizens will always be a valued memory.

It is indeed a remarkable and unique tribute to the earnestness of such an effort that practically all of the original contributors maintained their voluntary subscriptions for the seven years; many others, without solicitation, sent in funds from time to time resulting in total payments of nearly ninety thousand dollars during the period.

I have no doubt that our members and supporters who have given generously of their time and money during the life of this Board will continue to have a sympathetic and practical interest in this very important work under whatever auspices it may be carried on.

SURVEY OF THE RESOURCES AND INDUSTRY OF NEWFOUNDLAND

In 1948 the Board engaged the services of Donald Ross & Co. of Montreal to make a study of the resources and industry of the country.

Upon conclusion of this study, in December 1949, their full report was published and distributed free of cost to all the Provincial and Federal Government Departments, as well as to other interested parties.

A limited number was placed on sale at \$1.00 per copy, a few of which are still available and may be had by applying to the Department of Economic Development.

We feel it is worthwhile to include in this publication the following "Summary and Conclusions" arrived at by Donald, Ross & Co.:—

SUMMARY AND CONCLUSIONS

The Province of Newfoundland, comprising the Island of Newfoundland and Labrador, is the most easterly portion of North America. Geographically, it is essentially an extension of the unsubmerged highlands of the Appalachian Mountain system. Its coastal waters constitute some of the finest fishing grounds of the world.

The province's economic development has been restricted by geographic limitations. Climate, terrain and soil are unfavourable to agriculture, and in contrast to most of the settled parts of Canada, farming can never support a large population or become one of the main primary industries. The economic and industrial develop-

ment of the province has been founded on its natural resources, chiefly fishing, mining and forestry, the latter largely pulp and paper. Fortunately, for a country without fuel resources other than wood, power sites on the many rivers of the province have made possible hydro-electric developments which serve the pulp and paper and mining industries and provide relatively cheap electric services to the larger communities.

Due to insular location, historical background and dependence upon primary industry, Newfoundland in the past has had an economy committed directly to neither Europe nor North America, with tariff walls favouring domestic secondary manufacturing industry.

Low agricultural production, the necessity of importing raw materials and a restricted market have resulted in a relatively small manufacturing industry supplying the primary industries and the needs of the population. On the other hand, Newfoundland's export and import trade per caput is amongst the highest in the world.

As a result of confederation, the Newfoundland economy is now being integrated with that of Canada. While this will not alter the dependence of the prosperity of Newfoundland upon exports and upon world trade, it does make Newfoundland's economic problems part of those of Canada.

Expansion of the Newfoundland economy must, self-evidently, be based on natural resources and, consequently, on the primary industries of fishing, pulp and paper and mining. Plans for expansion should envisage further conversion of the primary products within Newfoundland, thus establishing new industries, providing more employment and increasing export values.

The fisheries, giving employment to the larger number of people, are mainly dependent upon export markets outside the dollar area and are presently being

adversely affected by the dollar shortage and competition from other areas. Further development of the frozen fresh fish production, supplying the more lucrative markets, is obviously of the greatest importance, but improvement in techniques in the salt codfishery must take place if markets are to be maintained in the face of competition and adequate returns obtained by the fishermen. These problems are fully recognized by the Fisheries Board, and the Board should receive the unqualified support of Industry and Government.

The pulp and paper industry in the last twenty years has usually exceeded the fishing industry in value of production, although employing fewer people, and the prosperity of the province largely depends upon pulp and paper. Further expansion is contingent upon the adequacy of timber supplies on the island, as to which there is some difference of opinion, and upon greater utilization of Labrador timber. However, the possibility of an expansion of the industry by some 25 to 30% seems a reasonable expectation.

It would seem desirable to investigate the possibility of further diversifying production by undertaking the manufacture of high grade pulps for which there appears to be an expanding world market. Such a development would not only increase production but would involve a greater degree of manufacture.

The mining industry should also be capable of expansion. The Buchans Mining Company have discovered new ore bodies which promise to prolong the life of the mine and permit of enlarged operations. The possibility of smelting the zinc and lead concentrates in Newfoundland deserves thorough investigation and would materially strengthen the economy. In this connection, the availability of potential hydro-electric power sites on the south coast combined with ice-free harbours should be considered.

The Wabana iron deposit represents one of the great iron ore reserves of the world, and it is the only large deposit on tidewater in North America. The availability and ease of transportation, and the low capital cost required for expansion appear to justify expectations of enlarged operations, although the grade of ore is somewhat lower than the grade reported for the new Labrador deposits.

The new large and high grade iron ore deposits of Labrador and Northeastern Quebec are undergoing rapid development, and plans for large scale commercial exploitation are being pressed. Consummation of these plans will greatly increase Newfoundland's mineral exports and open up new territory to exploration and development.

Prospects in general, therefore, warrant optimism for the expansion of mining in Newfoundland. In view of the importance to the economy, every encouragement and assistance should be given to the mining industry.

If the expansion of the pulp and paper and mining industries can be brought about, and particularly if fuller utilization of these resources within Newfoundland can be accomplished, pronounced benefits to the economy as a whole will follow.

Agriculture in Newfoundland has been limited by the relatively small area of good arable land and by climatic conditions; it has also suffered from the traditional trade practices of exporting fish and importing foodstuffs. Increased agricultural production, especially vegetable crops, to supply the requirements of the large centres of population should be possible but will need improvement in farming techniques, adequate marketing policies and active promotion of agriculture by Government direction. Not least important is the recognition of the practicability of farming as a main industry rather than as a part-time industry subsidiary to other employment. Greater pro-

duction of the home and garden type of agriculture in the outlying districts should also be actively promoted. The prosperity in the fishing industry in recent years has tended to lower such production, thus making the fisherman entirely dependent upon fishing income.

Trans-Atlantic air transport, using the airfields of Newfoundland as refueling bases, has become an important new industry that will continue to expand. It deserves all possible support as a valuable economic asset.

The tourist industry, while not new to Newfoundland, has not been exploited in modern fashion. Provision of national parks, development of resort areas and exploitation of the scenic and sporting attractions of the province should give new employment, added trade and annual income from sources. The proposed trans-island highway and other improvements to the road system would materially aid the tourist industry.

The secondary manufacturing industries are currently in process of adjusting themselves to the loss of tariff protection against imports from the rest of Canada and the new marketing problems arising from confederation. The relatively small size of the manufacturing unit, resulting from the small domestic market, tends to high costs. If competition from the larger and more highly organized industry of Eastern Canada is to be successfully met, costs will have to be reduced. For instance, coal costs have been unduly high as compared with costs for similar coal at Montreal and Halifax.

If the primary industries expand, the domestic market for the secondary manufacturing industries will be enlarged. With some increase in the domestic market, it should be possible to establish a number of new industries. Such possibilities are discussed more fully in the body of the report. In general, we believe a steady if slow expansion of secondary manufacturing industry can be expected.

To generally assist the industrial development of the province more stress should be laid upon the scientific and technical aspects of education, particularly in relation to forestry and pulp and paper, mining and fishing.

As a result of war-time expenditures and the continued demand for Newfoundland's exports, a relatively high state of prosperity has existed for some time, and the immediate problem is to maintain this prosperity in the face of declining export markets. Newfoundland now has the support of the Canadian economy as a whole, which includes social benefits, defence expenditures and public works. All these will assist in maintaining the purchasing power of the community and thus support the secondary manufacturing industries. Newfoundland's economic problems, however, are inseparable from the basic factors of the sparseness of population and dependence upon the primary industries of fishing, pulp and paper and mining. Any major increase in population seems highly improbable. Expansion of the economy must, therefore, be based upon expansion of the primary industries, more efficient use of the natural resources and particularly upon great utilization of the natural resources.

REPORTS AND ARTICLES ON CERTAIN
INVESTIGATIONS UNDERTAKEN BY THE
NEWFOUNDLAND INDUSTRIAL
DEVELOPMENT BOARD,

1942—1949

By H. J. RUSSELL, Director

FORESTRY PRODUCTS

Birch

The forests of Newfoundland contain sizeable quantities of birch, both white and yellow, which is found intermingled with the coniferous species, although pure birch stands of varying size do occur in many areas.

Yellow birch is predominant on the West Coast of the island, and white birch in the Eastern and central areas. No survey or even an estimate of the quantities of birch available has ever been published, as far as is known. The reason for this apparently is that, in Newfoundland, birch has not been regarded as a valuable species, and its chief use, up to the present time, has been for firewood and railroad ties, although small quantities have been manufactured into flooring and other wood products.

The Industrial Development Board has been endeavouring for years to gather as much information as possible concerning the birch resources of the country, and, at the same time, trying to find ways to create an industry based on the utilization of this species.

In 1948, the Board decided to undertake a timber survey of certain white birch areas in the vicinity of the

Exploits and Noel Pauls Rivers. The purpose of this survey was mainly experimental as there had been no previous work of this nature.

As people with hardwood experience were not available locally, it was decided to employ the services of a Quebec firm of forest engineers who were familiar with this type of work. Their report disclosed the following information:

"An area of some 13,000 acres or about 20 square miles was surveyed and white birch was found on 4,477 acres, or 34% of the area, giving a total content of merchantable hardwood of 1,400,000 cubic feet, or 7,000,000 B.F.M. according to the Newfoundland official table of log measurement.

For different causes and particularly on account of the previous softwood exploitations more than 75% of the hardwoods had been affected by some disease and were left as decadent trees unfit for lumber. All these trees were rejected in the above estimate:

The remaining healthy trees were liable to be attacked the same way if they were not cut within the next few days.

The 7,000,000 B.F.M. merchantable might be converted into ties, spoolwood and lumber with few logs good for veneer but probably too scarce to justify a selection and be sold for that purpose.

On account of the danger of infection menacing the remaining good hardwood, the cutting of same as soon as possible was strongly recommended if the cost was not too high. Such operation would not, in their opinion, affect the softwood reproduction, which is very abundant, and future stands should not suffer from the disappearance of the few stems which might follow the hardwoods exploitation.

All the trees eight inches and above diameter breast height were recorded in the course of the work on each sample plot, and of the trees measured 77% were between 8" and 12" diameter breast height, and 23% were between 13" and 20". A very small proportion of this latter group were over 15" D.B.H."

It should be pointed out here with reference to the statement that 75% of the hardwoods had been affected by disease, that the area unfortunately chosen for survey should not be considered representative of the majority of birch stands in Newfoundland. This particular area contains a large proportion of mature birch and within recent years the softwoods had been cut out thus leaving the birch exposed to wind and weather. It is chiefly for this reason that the birch has deteriorated and not because of "dieback," a disease which is fortunately not present in Newfoundland.

It is becoming all too clear that to prevent deterioration and consequent loss, our birch must be cut at the same time as the softwood species. Roads and other facilities set up for the cutting of spruce and fir could be used to save expense if birch cutting were done simultaneously.

Though no actual figures can be put forth to support this claim, it is the belief of the Board, based on its investigations into this matter that there are sizeable quantities of merchantable birch available and that this timber can be utilized to substantially increase the value of Newfoundland's forest industries.

As a result of evidence given by competent authorities, the Board feels that it is the older growth of birch that is mainly affected by disease and that there is a considerable volume of young birch from 6-8 inches in diameter not only readily available but increasing rapidly each year.

Another very important factor is the increased high road building programme that has been in effect for the past few years. As new roads are constructed, areas of birch and other timber are becoming accessible, and it becomes a relatively easy matter to cut and haul birch from these areas by truck.

While it is not possible to present a complete list of all the areas in Newfoundland where birch may be found, the following list of places or regions that are known to contain good stands of birch may be helpful: (1) St. Georges-Corner Brook, (2) Bonne Bay, (3) Cormack-Deer Lake, (4) Gander-Glenwood, (5) Lewisporte, (6) Sandy River-Grand Falls, (7) Gambo-Terra Nova, (8) Colinet-Salmonier.

Plywood and Veneer

One suggested method of utilizing our birch resources is the manufacture of veneer plywood.

Veneer is usually made by rotating a log against the knife edge of a veneer lathe and peeling off a thin sheet of wood. In a sense, the operation may be described as being similar to the unwinding of a roll of paper.

Plywood is made by laminating together a number of sheets of veneer in a press, an adhesive being employed between the sheets.

The brief descriptions given above do not, of course, cover either of the processes in detail. In general, however, the production of plywood requires a much greater investment in plant and machinery than the manufacture of veneer.

Neither veneer nor plywood is manufactured in Newfoundland to-day. Some years ago, a woodworking plant at Bay Roberts installed the necessary machinery for veneer production on a small scale, and, it is under-

stood, operated quite successfully for a number of years. The plant was later destroyed by fire.

Prior to the outbreak of World War II a European company made certain studies of the stands of birch on lands owned by the A.N.D. Co., with a view to establishing a veneer and plywood industry in Newfoundland. Their findings disclosed, in the particular areas surveyed, insufficient quantities of wood suitable for the proposed operation and their plans did not materialize.

The question of adequate wood supplies is one of the most important to be considered in endeavouring to assess the possibilities of either a plywood or veneer industry in Newfoundland. There are, unfortunately, no figures available that will show with any degree of accuracy the essential facts concerning the birch resources of Newfoundland. The only available information that the N.I.D.B. has is based on estimates and observations of reliable parties, with, of course, the addition of the information contained in the small survey previously mentioned.

The general trend of the reports and estimates that have so far been received does not indicate any great concentrated supply of large diameter birch for an extensive plywood manufacturing industry, but this should not be regarded as conclusive. This factor, in conjunction with the transportation and marketing problems, should be carefully studied, as Newfoundland's requirements of plywood are insufficient to support a plant.

The manufacture of veneer alone is a much simpler operation, both as regards capital and machinery required. For example, in the neighbouring provinces there are small inexpensive veneer plants in operation, turning out a birch veneer for fruit crates and other types of packages. The veneer lathes used are small and the size of wood required is very similar to that found in Newfoundland. The

majority of veneer plants are, however, quite substantial in size, and the illustration given above should not be taken as representative of the industry as a whole.

While veneer is not used in Newfoundland at present it is believed that uses could be found for it if produced locally. At the present time, the demand on the mainland of Canada and in the U. S. A. for birch veneer of all grades appears to be generally good. The cheaper grades of veneer are consumed mainly by the packaging industry and for use as plywood core stock, with the higher grades going mainly to the furniture or similar industries.

It might be that a veneer plant in Newfoundland would be more successful if it concentrated on production of higher quality veneer which has a correspondingly higher selling price. Thus the percentage of transportation costs to overall costs would be lessened, and one of the major difficulties of shipping to far away markets alleviated.

Birch Lumber

The demand for birch lumber of various sizes throughout Canada and the U. S. A. has been quite good for some considerable time, and indications are that this demand will continue. One important factor affecting this demand is the fact that in many of the provinces the stands of birch have been seriously attacked by "dieback". As previously stated, this difficulty has not yet been encountered in Newfoundland.

Among the chief users of birch are the furniture and flooring manufacturing industries of central Canada and the U. S. A., and in recent months several attempts have been made to place local birch on these markets. The chief difficulty, so far, has been the question of freight. The existing freight rates from Newfoundland to consuming centres such as Toronto, Ontario, are almost equal to the

cost of the lumber and make it difficult to sell this commodity at competitive prices.

Spoolwood

For many years the manufacture of spoolwood bars and finished spools has provided certain regions in Eastern Canada and the New England States with quite a profitable small industry.

Spoolwood bars and spools are purchased mainly by the thread manufacturing industry and are made almost exclusively from white birch, of which we have an abundance. The main markets to-day for spoolwood would appear to be the United States, the United Kingdom and the central provinces.

Spoolwood bars must be cut from sound, merchantable white birch, straight and smooth, free from coarse and black knots and crotches. Bolts are to be sawn 50" in length (2" allowance for trimming to 5 feet), and the diameter of the log should not be less than 6" at the small end. To prevent souring, care should be taken that the wood is sawn before the weather becomes mild; in fact, spoolwood is best sawn when frozen.

The size of spoolwood bars required by the thread industry varies from $\frac{3}{4}$ " squares, up to $2\frac{1}{4}$ " squares, dry sizes. To allow for shrinkage the wood, when green, should be sawn $1/16$ " to $5/32$ " larger.

After sawing, the squares or bars must be carefully stacked for air drying, and, when ready for shipment, the moisture content should not exceed 16%. Bars are shipped in bundles tied with twine or wire strapping. The number of bars per bundle varies with the dimensions of the bars.

Current prices for spoolwood are such that it is felt that a producer in Newfoundland would have no difficulty in making marketing arrangements.

A plant with an annual output of 2,000,000 board feet of squares would require an initial capital outlay of \$50,000 for new machinery and mill building. A mill of this type should saw 27 cords of wood per day. It takes from $2\frac{3}{4}$ to 3 cords of wood to produce 1000 feet of squares. The necessary capital expenditure could, of course, be reduced by purchasing used machinery.

A further development in the production of spool-wood squares or bars would be to manufacture the complete spool. In order to do this, one would, in the first instance, have to have a contract or other working agreement with a thread company, as these people usually prefer to manufacture the spools in their own plant. A second matter worthy of consideration is the question of customs tariff. For example, the United States imposes a 25% ad valorem duty on finished spools entering that country. This, in itself, would impose a severe handicap on any manufacturer endeavouring to export to that market. Some few years ago, the Industrial Development Board was negotiating with a United States company regarding the possibility of their establishing a spool manufacturing plant in Newfoundland. The proposed operation did not materialize mainly because of the handicap imposed by the United States tariff. However, this does not affect the belief of the Newfoundland Industrial Development Board that a very useful industry can be developed around the cutting and exporting of spoolwood squares.

WALLBOARD

In 1949, the Newfoundland Industrial Development Board was asked by the Provincial Government if it would undertake a survey of the possibility of manufacturing wallboard at Corner Brook, bearing in mind the existing facilities of Bowater's (Nfld.) Pulp and Paper Mills, Ltd., in that region.

The Board accepted this assignment, and engaged the services of Stadler, Hurter & Co., consulting engineers of Montreal, Canada, to undertake the investigation.

A condensation of the report submitted by Stadler, Hurter & Co. follows:

Summary

In accordance with instructions received from the Newfoundland Industrial Development Board, we have completed a survey of the possibility of establishing a Wallboard Mill at Corner Brook.

This survey, covering the cost of a Wallboard Mill, production cost of wallboard and market for wallboard, shows that the only serious problem to be solved is the establishment of a satisfactory system of marketing the wallboard produced.

The wallboard requirements of the Province of Newfoundland are estimated to reach 6,000,000 sq. ft. per annum. By selling wallboard at approximately \$40.00 per thousand square feet f.o.b. Corner Brook, in carload lots of about 30,000 sq. ft., the mill should secure the major proportion of this business, at a relatively small sales expense, while at the same time materially reducing the cost of wallboard to the local consumer. The balance of over 54,000,000 sq. ft. would have to be marketed elsewhere. At the present time, restrictions of various kinds on foreign trade by consumer countries effectively limit the market for wallboard to Canada, while the Canadian market is well supplied and is highly competitive, as a result of this curtailed export market. The only satisfactory way to establish the necessary sales and distribution outlets in Canada will be to enter into a long term sales agreement with an established coast to coast building supply company requiring a reliable source of supply for insulating board and wallboard to complete their line of building supplies. It is advisable that the national

distributor contracting to market the Mill output should also participate in the financing of the board mill development and not be merely a commission agent.

Provided, however, that the market outlet is secured, we would recommend that a wallboard mill be established, having a rated capacity of 60,000,000 sq. ft. of $\frac{1}{2}$ " insulating board per annum, and equipped to convert approximately one half of this production to quarter board, $\frac{1}{8}$ " hardboard, acoustic board, laths, or other special finishes, as may be required by the market. The equipment should be suitable to produce insulating boards from $\frac{1}{2}$ " to 1" in thickness, with the corresponding range of $\frac{1}{8}$ " to $\frac{1}{4}$ " in thickness of hardboards.

The cost of building and equipping such a wallboard plant at Corner Brook, where certain services are already available from the mill of Bowater (Nfld.) Limited, is estimated at \$3,655,000 complete, while working capital requirements will increase the total capitalisation to \$4,750,000.

The Wallboard Mill would provide full time employment for approximately 125 men in addition to the seasonal labour required to procure approximately 7,000 cords of birch logs, or the equivalent weight of other secondary wood. It is believed that most of the wood could be obtained locally in a large number of small lots by contracts with individuals not normally fully employed during the winter, and that in this way the cost of birch to the Wallboard Plant should be considerably less than the price of \$30.00 per cord used in the estimates.

Wallboard is a general term which covers a wide variety of products of widely varying qualities. These boards have, in general, been developed as an interior finish to replace lath and plaster.

For the purpose of this survey, we are concerned only

with wallboards produced from wood by-products, and these can be divided into four main classifications:

1. *Insulating Board:*

This is a bulky fibre board usually produced in thickness from $\frac{1}{2}$ " to 1", the $\frac{1}{2}$ " thickness averaging 690 to 700 lb. weight per 1,000 sq. ft. These boards vary in quality, but should have low thermal conductivity and be sufficiently strong and rigid to be self-supporting when nailed to studs or furring without other backing.

The preferred grades have a surface finish either plain or patterned such that priming and painting of the installed board will give a pleasing or decorative finish.

2. *Quarter Board or Half Hard Board:*

This board is generally similar to insulating board, except that in manufacture it is pressed to one half the thickness. The board is produced in thicknesses $\frac{1}{4}$ " to $\frac{1}{2}$ " and is used where thermal insulating qualities are less important and greater strength and rigidity of the board is required.

3. *Hard Boards:*

These boards are essentially substitutes for wood and are made in thicknesses usually from $\frac{1}{8}$ " to $\frac{1}{4}$ ". They are used mainly for table tops, counter tops, radiator covers, and trim where strength and rigidity are essential, and have little or no value as insulation.

4. *Special Boards:*

This covers a wide variety of boards, including boards containing thermosetting resins, which develop very high strengths on hot pressing, boards faced with a ply of special sheets, such as arborite, and a wide variety of boards used for the furniture and similar industries.

The first point to be settled, therefore, is the class and

quality of the wallboard to be produced by the proposed mill. This will depend on two primary considerations:

1. The types of board for which a ready market can be found.
2. Which of these boards can be satisfactorily and profitably produced at Corner Brook from the available raw materials.

The market survey, made in conjunction with this report, shows quite clearly that, while there is a potential market outside of the dollar area, import quotas and currency restrictions preclude the marketing of any appreciable quantity of wallboard outside of Canada at the present time.

The existing Canadian wallboard mills have a capacity at least 20% greater than the Canadian consumption, and this, coupled with the loss of the export market, makes the marketing of wallboard in Canada highly competitive.

To enter the Canadian market, the product from the new development would require to meet one of these conditions:

- a. More attractive price than existing available supplies.
- b. Superior quality at the same price as existing supplies.
- c. Some other considerations which would make it attractive to dealers to handle the new product in preference to existing supplies.

Price

To build a new mill with the intention of securing a market by price cutting is quite impracticable in face of the strong position of the existing mills. However, as all wallboard is sold at list price f.o.b. mill, there will be certain areas in which freight differentials on wallboard from the new plant will give local price advantage. This area

essentially consists of the Province of Newfoundland, and might possibly also include a small area in the Maritime Provinces.

Quality

In view of the fact that the existing board mills have carried out extensive research and have made considerable advance in the quality of the board they produce, it is unreasonable to expect a new undertaking without this backlog of experience and "know-how" to enter the market with a superior board to that produced by the established mills.

Dealer Preference

There are a few nationally organized distributors of building products who, in order to carry a complete line, are wholesaling insulating board. In the majority of cases, this insulating board has been purchased from a board mill which also sells direct to consumers, so that the building supply firm is selling the same board in competition with the sales organization of the producers of the board. Some of these wholesale dealers have a complete line other than wallboard, and find the present system of handling wallboard very unsatisfactory. The suggestion has been put forward that, if they could secure an alternative source of supply of wallboard which could be manufactured under their brand name, they would then be in a position to make exclusive dealership contracts under which the dealer will handle exclusively a particular brand of the complete line of building supplies, and would have an exclusive sales area. Such exclusive dealer contracts are attractive to the dealer who obtains the benefits of the national advertising brand, in addition to the advantage of exclusive rights to the sale of the brand in his territory. In some cases, a small additional discount on overall sales of the exclusive brand may also be offered.

It, therefore, appears that in order to obtain a

satisfactory outlet for the board to be manufactured in the new development at a reasonable sales cost, the only real opportunity existing is by way of an exclusive contract with one well-established and well-organized national building product distributor who, at the present time, does not have an independent supply of wallboard.

It is our definite conclusion that without such a contract, it will be virtually impossible to market the product of the proposed wallboard mill. The first step, therefore, in the development of the wallboard mill would be to negotiate such a sales contract and assure the mill of an outlet for its production before any construction work is undertaken at the plant itself.

It follows automatically, that the class or quality of the board to be produced at the mill must be that class or quality which will meet the requirements of the proposed wholesale distributor. In all cases, the class of board required is a high quality insulation board plus a small quantity of half hard board and hard board.

Tests of the screenings from Bowater's paper mill and also the accumulated experience of the wallboard industry in Canada, show quite definitely that an insulating board made exclusively from screenings is of an inferior quality. As far as can be determined at the present time, the maximum amount of these screenings which could be incorporated in a high quality board, is about 50%. This may vary somewhat but cannot be definitely determined without a large scale test of the tailings. From the test work that has already been done, 50% appears to be a realistic proportion.

It will, therefore, be necessary to incorporate in the wallboard development, equipment for the production of a suitable wood fibre from new wood, at least equal in amount to the screenings available from the mill. The wood to be used should preferably be a secondary wood

of little commercial value. Operating cost estimates show that the profit from converting pulp wood to wallboard is less than the profit from converting the same wood to newsprint. However, there is a substantial supply of birch within a radius of 50 to 100 miles of Corner Brook for which there exists, at the present time, no market.

It is our considered opinion that the total requirement of new wood for the wallboard plant could be obtained by simply opening a Purchasing Office and offering a fair price for the requirements—about 7,000 cords per year—of birch delivered to mill site. Such an open market would naturally purchase birch in a large number of small lots, and would open up an opportunity for persons not normally fully employed in the winter time, to make profitable use of their spare time in cutting and hauling birch to the mill site.

In order to round out the complete line of building boards, it will be necessary to produce a proportion of acoustic board and lath from the insulating board and also imitation tile from the hard board. Equipment for these conversions has therefore been allowed for in the plans and estimates for the mill.

The capacity of the wallboard plant will be determined by the amount of boards which can be handled by the wholesalers, and also by the economic size of a wallboard mill.

The screenings available from the paper mill amount to approximately 35 tons a day and are sufficient for the production of 100,000 sq. ft. of $\frac{1}{2}$ " insulating boards per day. However, as already pointed out, not more than 50% of screenings can be used in the quality of boards required so that with 50% new wood, the wallboard plant would produce 200,000 sq. ft. per day to utilize all the available screenings.

The cost of the equipment and buildings for a wall-

board mill of 100,000 sq. ft. per days is almost 80% of the cost of a similar mill of 200,000 sq. ft. capacity, and requires practically the same operating crew.

Overhead expense is therefore 50% higher per unit of production for the 100,000 sq. ft. per day mill, as compared with the 200,000 sq. ft. per day mill, and operating and maintenance labour costs per unit are doubled. An inspection of the operations costs shows that such an increase in operating costs eliminates any profit, even with the most favourable raw material costs.

The production of 200,000 sq. ft. a day which requires practically the same labour force and only a small increase in capital expenditure, shows a possible operating profit of 8.9% of the total capital requirements.

We, therefore, recommend that the plant be designed and built to produce 60,000,000 sq. ft. of $\frac{1}{2}$ " insulating per year (approximately 200,000 sq. ft. per day), or equivalent quantities of other thicknesses of insulating board, and that equipment be included for the production of 100,000 sq. ft. per day or less of quarter board and hard board, as well as equipment to produce smaller quantities of acoustic board, lath, and roof insulating boards.

Market prospects for the wallboard to be produced at the proposed mill have been investigated. The following conclusions have been drawn from the replies of Trade Commissioners and dealers:

1. The main market areas for the product will be in Canada, and possibly some areas in the United States.

2. Due to currency restrictions and protection granted local industry, there is very little prospect of developing markets in the non-dollar areas. Most Trade Commissioners expect this condition to persist for many years.

3. It will be entirely uneconomic for the plant to

consider the establishment of its own sales organization. The plant output should be sold to an established national distributor on a long term sales contract.

4. The basic product should be soft board with hard board making facilities in reserve. The production of special board may be developed later.

Areas of Sale

The consumption of board in the main areas is as follows:

	<i>1/2" Soft- board</i>	<i>1/4" Hard- board</i>
Newfoundland	3,350,000	1,500,000
Canada	198,000,000	
Mexico	15,000,000 to 20,000,000	
Argentina	6,000,000 to 8,000,000	20,000,000
South Africa	60,000,000	
Jamaica	500,000	500,000
Peru	3,000,000	3,000,000
Venezuela	8,000,000	4,000,000
U. S. A.	1,800,000,000	

It is probable that the Newfoundland market would fall entirely to the proposed mill due to the plant location. This, however, represents only a small portion of the total production and, in itself, is insufficient to maintain the plant. As to the rest of Canada, production in the country as a whole has increased from 106,545,000 sq. ft. in 1939 to 254,928,000 sq. ft. in 1948. During the same period, consumption increased from 54,000,000 sq. ft. to 198,000,000 sq. ft. The export figure has therefore remained fairly constant at 56,000,000 sq. ft. or roughly 22% of total production for 1948. These exports are broken down as follows for two of the main areas:

	<i>B. W. I.</i>	<i>U. S. A.</i>
1948	4,450,000	10,560 sq. ft.
1947	7,160,000	1,750,000
1946	4,580,000	1,940,000
1945	2,340,000	
1944	3,140,000	
1943	2,460,000	
1942	1,800,000	
1941	4,700,000	
1940	2,300,000	
1939	1,500,000	

The U.S. consumption of wallboard for 1948 is approximately 1,800,000,000 sq. ft. It is undoubtedly large enough to absorb this mill's output provided the product could enter the country at a competitive price after payment of duty.

The other main consumers, Mexico, Argentina and South Africa have each established their own plants and, according to our Trade Commissioners, they will receive protection against imports through tariffs and import controls.

Accordingly it will be seen that the bulk of the sales will have to be made in Canada, and possibly the United States.

Distribution

The problem of distribution has been discussed with various individuals and companies, and the consensus has been that except perhaps for Newfoundland proper, it would be advisable to do all marketing through a well-established dealer organization which carries a complete line of building materials. This latter point has been stressed by the companies as a means by which they reduce their overhead, as otherwise the salesman's time is all chargeable to one item.

Any agreement entered into should be for the entire mill output or for a fixed quantity annually, and should run over a long period of time.

Product To Be Produced

There are established demands for quite a variety of boards, in addition to plain soft board. The main ones are as follows: Hardboard to compete with masonite. Plastic bonded hardboard for table tops, tilework, etc. Building board which may be used for finished wall panelling for good quality construction. The basic product is, however, in all cases softboard and the others are really conversions.

One dealer pointed out that the mill must be prepared to produce hardboard at any time even though it may sell only softboard at the start, as otherwise dealers may find themselves under pressure not to buy Bowater softboard under penalty of having their normal source of hardboard closed off.

To sum up, the mill should produce softboard, install a minimum of equipment to produce hardboard, and develop specialty boards only as conditions warrant.

Price

The price at which the mill would have to sell the board can be gauged from the following dealer prices:

	$\frac{1}{2}$ " Soft- board	$\frac{1}{4}$ " Std. Hard- board
Canada	\$39.80	\$52.00
United States	43.00	88.00
Mexico	49.00	
Argentina	41.30	$\frac{1}{8}$ " — 45.30
South Africa	54.50	$\frac{1}{4}$ " — 73.75

These prices are f.o.b. Gatineau, Que., and Winnipeg, Man., in the case of Canada; f.o.b. point of use in the case of the United States; and f.o.b. port of entry in the case of other countries; prevailing duties are included in all

cases. It must be pointed out again, however, that in the case of the non-dollar countries, imports are still prohibited to-day on account of currency and other import regulations.

These prices are gross mill prices from which must be deducted the cost of selling the board and any freight equalization allowances made to customers. Sales expense, if sold through a national distributor in Canada, will be from 22½% to 25% of the Canadian prices, with export orders netting the mill about the same price as Canadian orders.

Mill Process (Production 200,000 square feet per day)
Stock Preparation

Assuming that 50% of the raw materials will come from the mill as screens rejects and 50% from new wood, the following processing will be required as shown on Floor Sheets Drawings No. X-103 and X-104.

(a) *New Wood Preparation*

The logs will be chipped and the chips sent over a chip screen. The accepted chips from the chip screen will go to the storage bin by means of a chip elevator. From the storage bin the chips will be charged into a spherical digester where they will be cooked for a few minutes in the presence of steam at approximately 150 p.s.i. The cooked chips will then be dumped into a chest after the pressure has been brought down to atmospheric and the water drained out.

From the dump chest, the chips will be carried by means of a conveyor to a battery of refiners where the chips will be defibred, refined to the required quality and then dumped into the unwashed stock chest where the stock will be kept well agitated at 3%.

The stock will then be pumped from the unwashed chest to a consistency adjusting box where the consistency

will be reduced to .7%. The stock will then go through a rotary screen, the accepted stock going over a washer and to the screened birch stock chest, and the rejects back to the dump chest.

(b) *Tailings Preparation*

The coarse and fine screens rejects from the pulp mill will be collected in a common tank where the consistency will be kept at 1% through the addition of white water from the pulp mill. The groundwood Bull screens rejects will first be treated in a shredder and then sent to the collecting tank. This collecting tank will be located in the existing pulp mill. From the collecting tank the rejects or tailings will be pumped over to the board mill into the unrefined tailings stock chest after passing over a drainer in order to increase the consistency from 1% to 3%. The stock in the unrefined tailings stock chest will be kept agitated at high density since the type of stock tends to settle very rapidly. The stock will then be pumped to a high drainer in order to bring the consistency up to approximately 10%. From the drainer, the stock will drop directly into a battery of refiners where it will be refined to the required quality and from the refiners drop into the refined stock chest. The stock in the refined stock chest will also be kept well agitated at 3%. From the refined tailings stock chest, the stock will be pumped to a consistency adjusting box where it will be mixed with white water to bring the consistency down to .7%. From the consistency adjusting box it will go through a rotary screen, the accepted stock going over a slusher and to the screened tailings stock chest while the rejects will go back to the unrefined stock chest.

(c) *White Water Clarification*

Since no fresh water will be available for the board mill, white water clarifying equipment will be provided in the Stock Preparation Department. Excess white water

from the white water chest will be pumped over a save-all where the fibres will be separated from the water, the fibres going back into the system and the clarified white water being used as shower water and hot water in the board mill, and all excess pumped back to the pulp and paper mill for re-use.

2. Board Machine Room Department

From the screened stock chests, the two stocks will be pumped over to two consistency regulators where the consistency will be adjusted and then will go to two hydrocycle tanks where they will be blended and mixed with the required amount of chemicals, the contents of the hydroelectric tanks being dumped into the machine stock chest at 3%.

After the machine stock chest, the stock will be metered through a stuff box and then diluted in the machine headbox with recirculated white water from the board-forming machine. The stock will then enter the forming machine where it will be formed into a mat 8 feet wide and at approximately 20% fibres. This mat will be carried to a 5 rolls press section by means of a conveying table.

Leaving the press section, the mat will have a moisture content of 65% and will now be ready to enter the dryer. Before entering, however, the sheet will be cut into 4' lengths by means of a saw travelling across the conveyor table at the same speed as the sheet.

The sheet will be fed automatically into the dryer and will be dried to a moisture content of 15%. The sheet will then be trimmed to the required length and width, and will be ready to be sent either to the insulating board storage or to the hardboard conversion equipment.

The board to be converted to hardboard will be fed automatically into high frequency heating equipment and

then into a high pressure steam heated platen press. From the press, the board will be sent to the inspection table where it will be trimmed to its final dimensions, and from there, it will go to a humidifier and then to storage. In the humidifier a given amount of moisture will be added to the board in order to stabilize it. The trim and broke from both the wet and dry ends of the board machine will be repulped and sent back to the machine chest, while the defective hardboards and sawdust from the hardboard trim saw will be sent back to the boiler house.

A preliminary layout of the board mill and equipment is shown on Drawings Nos. X-105, X-106, X-107 and X-108.

Estimate of Capitalization

The cost of the complete wallboard plant has been estimated at \$3,665,000.00, as summarized in Estimate 170/07/1 attached.

In addition, the mill will require sufficient working capital (1) to purchase and store 7,000 cords of wood at \$30.00 per cord or \$210,000.00; (2) to carry 5 months storage or 25,000,000 sq. ft. of finished board in storage during the Winter season at an average of \$25.00 per 1000 square feet equal to \$625,000.00; (3) to cover ordinary trade credits and accounts equal to about 2 months production or \$250,000.00.

This makes a total of \$1,085,000.00 which added to the mill construction cost of \$3,665,000.00 amounts to \$4,750,000.00, the total capitalization required for the development.

WALLBOARD MILL — BUILDINGS AND EQUIPMENT

Item No.	Description	Quantity	Unit Cost		Cost	
			Material		Material	Total
1.	Wallboard Machinery Co. quotation dated December 12, 1949, covering complete equipment for wallboard plant except as noted below U.S.	\$1,504,000				
2.	U. S. Exchange—10%	150,400				
		<hr/>				
		1,654,400				
3.	Deduct (1) digester not required.....	10,400				1,644,000
4.	Bull Screening Shredder.....	1	5,000		5,000	
5.	Drainers	3	7,000		21,000	
6.	Slusher	11	9,000		9,000	
7.	Screen	1	8,000		8,000	
8.	Save All	1	8,500		8,500	
9.	Hydrocycle Tanks	2	5,500		11,000	
10.	Stock Chest Agitators.....	12	3,000		36,000	
11.	Stock Pumps	4	1,500		6,000	

12. Water Heater	1	1,000	1,000	
13. Hot Water Pump.....	1	1,000	1,000	
114. Additional Dryer (for 200,000 sq. ft./day)		85,000	+10%	93,500
15. Redryer (for hardboard conversion)		25,000	+10%	27,500
16. Humidifier (for hardboard conversion)		10,000	+10%	11,000
16. Acoustic Tile Drills.....				15,000
18. Special Surface Finishing Equipment.....				25,000
19. Hardboard Tile Scoring Equipment.....				5,500
20. Total Process Equipment.....				284,000
21. Installation and Erection.....				1,928,000
22. Miscellaneous Piping (additional to UMW. quotation)				200,000
23. Miscellaneous Motors and Electric Wiring (additional to UMW quotation).....				10,000
24. Tailings Piping and Service Connections from Mill				30,000
25. Storing and handling Equipment Finished Board				30,000
				20,000

WALLBOARD MILL—BUILDINGS AND EQUIPMENT

Item No.	Description	Quantity	Unit Cost		Cost	
			Material		Total	
26.	Steam Plant Extension.....			250,000	340,000	
27.	Total Equipment				2,468,000	
28.	Miscellaneous and Contingencies.....				247,000	
29.	Overhead and Engineering.....				200,000	
30.	Mill and Storage Buildings.....				750,000	
31.	Total				3,665,000	

Operating Costs

General

As wallboards are made in a variety of sizes and thicknesses, the trade practice is to establish a base price for $\frac{1}{2}$ " thick insulating board; for $\frac{1}{4}$ " half board; and for $\frac{1}{8}$ " hardboard, all in 4' x 8' sheets, and to establish differentials in price for other thicknesses and sizes. As it is impossible to establish any reliable ratio of probable thicknesses of board to be produced, the operating cost estimate has been based on producing 200,000 square feet of $\frac{1}{2}$ " insulating board per day, and the conversion of 100,000 square feet per day to half hard board or hard board.

This assumes that the variation in cost of producing various thicknesses of wallboard is offset by the established differentials in selling price, and should give as reliable an estimate of the operating costs and income of the mill as any arbitrary breakdown of the production with a corresponding multiplicity of cost estimates.

While it is true that the characteristics of the board formed on the machine will vary depending on whether the end use is as insulating board or as hard board, this again is a question of operating technique which will have a negligible effect on the cost estimates.

Basic Raw Material

(1) 100% *Pulp Wood*

Current average cost of pulp wood at Corner Brook is reported as \$30.00 per cord, yielding approximately 2,300 No. of fibre per cord. On the basis of 700 No. of fibre per 1,000 sq. ft. of half board, the raw material cost of pulp wood will be \$9.13.

(2) 100% *Birch Wood*

Estimating the cost of birch at \$30.00—the same price

per cord as the current cost of pulp wood—and allowing a yield of 4,000 No. of fibre per cord of birch, the raw material cost per 1,000 sq. ft. of half board will be \$5.25.

(3) *Utilization of Mill Screenings*

Paper Mill screenings are available for approximately one half the requirements of the board mill. The economics of using screenings in the board mill will depend largely on the cost charged for these screenings.

The screenings may be charged to the board mill in several ways:

(a) Screenings may be valued at the equivalent cost of their pulp wood content. This in effect would charge the tailings at the same value as if the board mill used pulp wood for this portion of the furnish. The total wood cost per 1,000 sq. ft. would be:

350 No. Birch at \$15.00/ton.....	\$2.63
350 No. Screenings at \$30/ton.....	5.26
	<hr/>
	\$7.89
	<hr/>

(b) The paper mill screenings can be divided roughly in 56% of screenings which could be reprocessed in the mill and returned to the paper machine furnish and 44% of screenings which are waste as far as the paper mill is concerned. If the useable screenings are charged as a wood value of \$30.00 per ton, and the waste portion at no value, then the raw material cost per 1000 sq. ft. of 1/2" board would be

350 No. Birch at \$15.00/ton.....	\$2.63
196 No. Screenings at \$30.00/ton.....	2.94
154 No. Screenings at no value.....	
	<hr/>
	\$5.57
	<hr/>

(c) The 44% of paper mill screenings (comprising sulphite knots and fine screenings) which are of no commercial value to the paper mill, are also of least value to the board mill, and the use of these screenings may present an operating problem to the board mill in producing insulating board of high insulating value and good appearance. The balance of the screenings, however, can be processed into a fairly good board furnish. On the basis that by using birch the board mill can produce fibre at a wood cost of \$15.00 per ton, then the cost to the board mill of the 56% of "good" screenings may be valued at the wood cost of equivalent birch. This would result in a raw material cost per 1,000 sq. ft. of board of:

350 No. Birch at \$15.00/ton.....	\$2.63
196 No. Screenings at \$15.00/ton.....	1.47
153 No. Screenings at no value.....	
<hr/>	<hr/>
700 No.	\$4.10

(d) The demand of the newsprint market for improved quality in the news sheet has already caused several newsprint mills to abandon the use of reprocessed (refined) screenings in the paper mill. If, therefore, this condition arises at Corner Brook, and a decreasing amount of refined screenings can be used in the paper mill, then the proportion of waste screenings of no value will increase, and ultimately the board will be supplied with screenings which are of no value to the paper mill. Under these conditions, an equitable charge to the board mill for all screenings would be the cost of collecting and pumping these screenings to the board mill, which should not exceed \$5.00 per ton including the cost of shredding the Bull screenings.

The cost per 1,000 sq. ft. to the board mill will then be

350 No. Birch at \$15.00/ton.....	\$2.63
350 No. Screenings at \$5.00/ton.....	.88
	<hr/>
	\$3.51
	<hr/>

(4) The cost of birch has been taken at \$30.00 per cord delivered to Wallboard Mill, based on current cost of pulpwood at Corner Brook. The average cost of pulpwood, however, includes a fairly high average transportation cost, while adequate supplies of birch are available within a radius of 50 to 100 miles of Corner Brook and some birch firewood is being sold there at \$12.00 per cord. It is probable that a price of \$15.00 to \$18.00 per cord would produce all the birch required for the Wallboard Mill. At \$18.00 per cord, the cost of 100% birch furnish would be reduced from \$5.25 to \$3.65 per 1,000 sq. ft. with corresponding reductions in raw material costs.

The cost of raw material used in these estimates and based on birch at \$30.00 per cord is therefore considered to be high, and are very safe figures to use in estimating the probable operating profit. Any reduction in the cost of birch will naturally be reflected in an increase in operating profit.

Labour Distribution (based on 8-hour shifts)

(1) Shredder operation, tailings collection and pumping from Paper Mill to Board Mill by existing Paper Mill crew and included in tailings value.

	Men	Shifts	Total	Rate	Cost/day
(2) Chip Preparation	4	1	4	1.00	32.00
Wood Handling					
Chipper Room	2	1	2	1.00	16.00
(3) Digester and Dump Chest.....	2	3	6	1.20	57.60
(4) Stock Preparation	2	3	6	1.20	57.60
(5) Board Machine					
Foreman	1	3	3	1.75	42.00
Stock Runner	1	3	3	1.20	28.80
Machine Tender	1	3	3	1.50	36.00
Dryer Operator	1	3	3	1.35	32.40
Dry Saws	5	3	15	1.20	144.00
Broke Hustler and Swiper.....	1	3	3	1.00	24.00
Inspector	1	3	3	1.20	28.80
Stacking and Packing	6	1	6	1.20	57.60
Trucking	1	3	3	1.10	26.40
Conversion	1	3	3	1.10	26.40
Total—Soft Board			63		609.60

3.05/M sq. ft.

(6)		Men	Shifts	Total	Rate	Cost/day
	Hardboard Conversion					
	Loaders (Redryer)	2	3	6	1.20	57.60
	Loaders (Heater)	2	3	6	1.20	57.60
	Press Operator	1	3	3	1.35	32.40
	Press Operator Helper	2	3	6	1.20	57.60
	Unloaders (Humidifier)	2	3	6	1.00	48.00
	Inspector	1	3	3	1.20	28.80
	Trimming, etc.	4	1	4	1.10	35.20
	Packaging	6	1	6	1.20	57.60
	Trucker	1	3	3	1.10	26.40
	Sweeper	1	3	3	1.00	24.00
	Foreman	1	3	3	1.50	36.00
	Total—Hardboard Conversion			49		461.20

4.61/M sq. ft.

(7)		Men	Shifts	Total	Rate	Cost/day
	Electrical	1	3	3	1.25	30.00
	Oilier	1	3	3	1.00	24.00
	Millwright	1	3	3	1.25	30.00
	Maintenance	2	1	2	1.25	20.00
	Total			11		104.00

0.52/M sq. ft.

Total Men 63 49+11—123

Conversion Costs based on \$200,000 sq. feet/day

(1) Labour		
Operating	3.05	
Maintenance .....	.52	3.57
	<hr/>	
(2) Chemicals		
Steam No. 8, at 5½c.....	.44	
Alum No. 15, at 1½c.....	.22	.66
	<hr/>	
(3) Services		
Steam, No. 5000, at 75c. M.....	3.75	
Electric Power	1.05	4.80
	<hr/>	
(4) Operating Supplies		
Repairs .....	.72	
Belting .....	.08	
Lubricants .....	.10	
Wires, etc. ....	.03	
Wrapper .....	.90	1.83
	<hr/>	
Total Conversion		10.86
		<hr/>

Hardboard Conversion (1,000,000 sq. ft./day)

Steam	0.72
Labour	4.61
	<hr/>
Total Hardboard Conversion.....	5.33

Overhead

(1) Administration		
Salaries .....	.50	
Expense .....	.25	.75
	<hr/>	
(2) Depreciation—\$3,665,000 at 7%.....		
Interest—\$4,750,000 at 5%.....		4.23
		3.96
		<hr/>
Total Overhead		8.99
		<hr/>

Comparative Estimated Costs per 1000 square feet $\frac{1}{2}$ " Insulating Board.

	(1)	(2)	(3a)	(3b)	(3c)	(3d)
Raw Material	9.13	5.25	7.89	5.57	4.10	3.51
Conversion Cost	10.86					
Overhead	8.99					
Operating Cost	28.98	25.10	27.74	25.42	23.95	23.36
Mill net selling price.....	31.00	31.00	31.00	31.00	31.00	31.00
Operating Profit	2.02	5.90	3.26	5.58	7.05	7.64
Annual Operating Profit	\$121,200.00	\$354,000.00	\$195,600.00	334,800.00	\$423,000.00	\$458,400.00
% on \$4,750,000.00	2.5	7.5	4.1	7.0	8.9	9.7
(1) No. 700 Fibre from Pulp wood at \$30.00 per cord.						
(2) No. 700 Fibre from Birch at \$30.00 per cord.						
(3a) No. 350 Fibre from Birch—No. 350 fibre from Screenings at \$30.00 per ton.						
(3b) No. 350 Fibre from Birch—No. 196 Screenings at \$30. per ton, No. 154 Screenings—no value.						
(3c) No. 350 Fibre from Birch—No. 196 Screenings at \$15. per ton, No. 154 Screenings—no value.						
(3d) No. 350 Fibre from Birch—No. 350 Screenings at \$5.00 per ton.						

(2) From the Comparative Table it will be seen that

a. Pulpwood cannot be economically used for the production of wallboard.

b. Birch at \$30.00 per cord will allow of a reasonable profit margin with some protection for fluctuation in price or curtailment in production.

c. The wallboard mill cannot afford to pay \$30.00 per ton for paper mill screenings while birch is available at \$30.00 per cord.

d. The wallboard mill will be penalized even if only the refinable groundwork screenings are charged at \$30.00 per ton, and sulphite knots and screenings are charged at no value.

e. The wallboard mill will profit if groundwood tailings are available at \$15.00 per ton, and balance of tailings at no value.

f. Maximum profit will be available from the wallboard mill if all tailings are charged at cost of collection only.

(3) The actual accounting basis on which screenings will be charged to the wallboard mill will have to be determined by Bowater's, Newfoundland, Limited, and this basis will determine the final cost of the wallboard.

(4) If the cost of the birch varies from \$30.00 per cord, the raw material costs shown will vary to correspond, and the value of paper mill screenings to the wallboard mill will vary in direct proportion to the variation in cost of birch.

WOODEN BOXES AND PACKAGES

The manufacture of wooden packages in Newfoundland consists chiefly of the production of casks, barrels and drums for the salt codfish industry, barrels for the

herring industry, boxes for the frozen blueberry trade, and packages of varying types for the secondary manufacturing industries.

As was pointed out in page 69 in the Story of the Board, the wooden packaging industry in Newfoundland has declined somewhat because of the inroads made by the fibre-board or corrugated carton. No published estimate of the value of the wooden package manufacturing industry to the economy of the province has ever been given, but it is possible to make a very rough estimate on the following basis. Taking an average of two recent years, some 5,000,000 F.B.M. of local lumber was sawn for the manufacture of barrels, casks, boxes, etc. At an average price of \$50.00 per M.B.F., the total value of this amount of lumber would be \$250,000.00. Assuming the value of this raw material to be increased say three and one half times by manufacture, the gross value of production of the wooden barrel and box industry would be in the region of \$900,000.00.

The Newfoundland Industrial Development Board has carefully explored new avenues of possible expansion for the wooden packaging industry, and has, in addition, conducted certain investigations into the cost of production of packaging materials used by the fishing industry.

In endeavouring to find new outlets for the products of this industry, the Board examined the domestic market to see if there were new types of boxes or other packages that could be successfully used by local producers or manufacturers. An example of this was an investigation of the possibility of producing 100 lb. boxes for salt cod-fish export. On the other hand, efforts were made to see if it would be possible to find an outlet for locally made wooden packages in other countries. In this latter case, a great deal of the Board's work was done at the period shortly after the war when wooden packages of all kinds

were scarce and marketing opportunities for box and barrel manufacturers were extremely good.

It must be admitted, at the outset, that the costs of shipping empty packages, particularly wooden ones, even in knocked down form, any great distance, are high, and that this, in itself, imposes a handicap on the local producer. However, bearing this in mind, the Board gathered all possible information from a number of places where wooden packages were in demand. Among these were several regions in the United States and the West Indies. This information was passed along to local producers and other interested parties.

Although nothing definite materialized from these efforts, the Board has been able, as a result of its work in the field of wooden packaging, to gather some rather interesting data concerning the industry as a whole in Newfoundland.

In Newfoundland, with the possible exception of one or two firms, there are no plants of any size devoted exclusively to the manufacture of wooden boxes, barrels, etc., on a production basis. There are approximately 150 licensed manufacturers of export packages for salt codfish. Their plants vary in size, but the majority are quite small.

The larger woodworking establishments occasionally manufacture limited quantities of packages but are generally disinclined to enter this phase of the business, as they believe it to be spasmodic in nature and generally unprofitable.

It is generally recognized that locally manufactured boxes, barrels, etc., are, in the main, higher in cost than those produced in other comparative regions or countries. The investigations of the Board into the local manufacture of wooden packaging, with particular emphasis on packaging for the fishing industry, have substantiated this fact. The underlying reasons for this condition are, however,

not generally known, and the Board's conclusions in this respect may be of interest. They are as follows:

(1) Generally higher costs of saw logs or lumber in Newfoundland.

(2) In general, local lumber and saw logs delivered for the purpose are not comparable in quality with those of competing provinces. This applies particularly on the Avalon Peninsula.

(3) Box and barrel manufacturing plants in Newfoundland are not as well equipped with machinery and other production facilities, nor is the plant layout as efficient as that of competitors.

These first two conclusions, when examined in detail, should be considered together, as they are closely related. A study made in 1947, of the comparative costs of saw logs used in package manufacture, showed that saw logs delivered at mills on the Avalon Peninsula were costing from \$40.00 to \$45.00 per M.B.F., while, in a nearby province, similar logs were costing \$30.00 to \$32.00 per M.B.F. In this latter region, manufacturers owned their own small woodlots and were cutting their own timber at even lower prices. Incidentally, the system of small woodlot ownership has never been developed in Newfoundland to any extent, though it seems to have many obvious advantages, including the encouragement of sound forestry practices, such as selective cutting.

Saw logs, cut in this neighbouring province, and examined by the Board's representatives, were found to be generally larger, straighter, and of better quality than those being used by local mills. The average diameter, as well as the general quality, of saw logs found in Newfoundland appears to be diminishing each year. This condition is particularly noticeable in those areas where cutting is more intense.

Another point which the majority of the local operators brought up was that the turnout from logs, scaled by the official Newfoundland log scale, averaged 750 to 850 F.B.M. only, instead of 1000 F.B.M. This factor, in itself, has the effect of increasing the cost of manufactured lumber. It is interesting to note that both the Quebec and New Brunswick official log scales are much more generous with regard to turnout, particularly in the smaller log sizes.

On the subject of plant equipment and layout, it was quite apparent that manufacturers in the neighboring province visited had not only planned their production and plant facilities with greater care, but had adopted special tools and machinery, whenever possible, to speed production and reduce costs. A great deal of the special equipment referred to was designed and built by the package manufacturers themselves and was in no way outside the reach of manufacturers in Newfoundland.

CARDBOARD CARTONS AND SHIPPING CONTAINERS

Within recent years there has been a very rapid growth in the packaging field. The emphasis has largely been on the increased use of attractive cardboard setup and folding boxes for packaging individual products, and of corrugated and solid fibre cartons as shipping containers.

For example, in Canada in 1929 there were 128 plants engaged in the manufacture of paper boxes, cartons, bags, etc. These plants had a total gross value of production of 22.8 million dollars. In 1947 the number of plants engaged in this industry had increased to 165 and the gross value of production to 91.6 million dollars.

Corrugated and fibre containers in particular have in recent years largely displaced the wooden box as a container for a wide variety of consumer goods. This trend is quite noticeable here in Newfoundland, where products

such as frozen fillets of fish, margarine, biscuits, etc., which were formerly shipped in wooden containers, are now largely packaged in cardboard cartons.

The wooden containers formerly used were manufactured in Newfoundland by moderate sized plants and by small individual enterprises. The decline of this industry, which at its peak was of sizeable proportions, has had an adverse effect on the economy of many parts of the island. The principal industry in Newfoundland which continues to use wooden containers is, of course, the salt codfish trade, for which the manufacture of barrels, casks and drums is still carried on in many parts of the island.

The various types of cardboard containers now used by Newfoundland manufacturers must all be imported into the country, as there are no cartons produced locally.

The question immediately arises—can cardboard cartons of either type be manufactured locally on a basis competitive to existing sources of supply?

According to the Customs Returns for the fiscal year ending 31 March 1948, Newfoundland imported 5,842,573 lbs. of cardboard containers of all types. The value of these cartons is given at \$549,367. It is not possible to obtain a further breakdown of these figures into cartons by various types. However, it is believed that a substantial proportion of the imported cartons were corrugated or solid fibre shipping containers, of which we estimate Newfoundland's present annual requirements to be somewhere in the region of one million to 1¼ million cartons per year. The balance of this amount would be made up of set up and folding cardboard boxes and paper containers.

The manufacture of folding or set up cartons requires a fairly extensive investment in printing and cutting machinery, as well as experienced technical personnel.

As in all industries of this nature, economical produc-

tion depends on being able to turn out large quantities of a particular type of carton at a time. Therefore long runs are always preferable.

Newfoundland uses a wide variety of sizes and designs of cartons, which are at present being supplied by firms on the mainland. Whether or not these cartons could be manufactured in Newfoundland at a competitive price is a subject for detailed investigation. It might be well worth while for one of the existing printing companies to have a study made of the possibilities of carton manufacture.

The manufacture of corrugated or solid fibre shipping containers is, of course, a different process from the manufacture of the smaller cartons, though closely allied to it. The possibilities of manufacturing shipping containers in Newfoundland should, therefore, be given separate study.

Of the million to $1\frac{1}{4}$ million shipping containers which, we estimate, are used in Newfoundland annually, at least 50% or more are used by the various firms in the frozen fish trade.

It follows, therefore, that the consumption of these containers in Newfoundland will increase with the continued expansion of the frozen fish industry.

Corrugated cartons are manufactured from kraft liner board, and corrugating paper, which is also made of kraft or straw. Kraft paper is a brown sulphate product of high tensile strength. It is not produced by the paper companies in Newfoundland as the process used is quite different. A corrugated carton manufacturing plant in Newfoundland would therefore have to rely on imported supplies of kraft paper. All the other principal raw materials required, such as: tape, silicate of soda, glue, stitching wire, ink, etc., would also have to be imported.

In 1945, the N.I.D.B., obtained an estimate of the cost

of the machinery necessary to equip a small plant for the manufacture of corrugated shipping containers. The price quoted at that time was approximately \$167,000. This figure is given merely as an indication of the outlay involved, and would, of course, be considerably greater today.

Furniture And Flooring

In order to try and stimulate local production of birch flooring, furniture and other manufactured wood products, the Newfoundland Industrial Development Board assisted a number of local firms in obtaining dry kilns as a first step toward turning out higher quality wood products. The Board also sponsored displays in St. John's of locally manufactured furniture produced at Buchans and Corner Brook.

The manufacture of flooring from local birch has been quite successful, and there would appear to be no reason why this product should not always find a ready market.

The furniture manufacturing field is a rather difficult one to assess. Under Newfoundland's former system of government, a customs tariff of 50% was imposed on all furniture imports. This, of course, made imported furniture rather high in price, but despite this tariff protection, no furniture industry of any great size was established, and furniture manufacture was mainly concentrated in small establishments employing from one to ten persons. This seems to reflect a lack of enterprise because it must be remembered that high freight charges on these bulky goods brought in from outside the Province are an additional measure of protection. The products of these local manufacturers are highly diversified, including cabinet work from rare hardwoods. The majority of the manufacturers, however, make a cheaper grade of furniture from both imported and domestic hardwoods and softwoods.

According to the Newfoundland Customs statistics for

the year ending March 31, 1949, imports of furniture wholly of wood amounted to \$200,000 ,and imports of upholstered furniture to \$68,500.

It is not possible to quote figures showing either the quantity or value of the domestic production of furniture, but the volume would be fairly considerable if the output of furniture plants, small woodworking establishments, handicraft and home working facilities is taken into account.

In order to produce furniture for a mass market two things are necessary. First, of course, the market itself must be large enough to make possible ample tooling for economic production. And secondly, the furniture must be designed and priced to be within the economic reach of the average buyer. The styling and quality of construction are also very important factors.

The main deterrent to fine furniture manufacture on a large scale is the limited variety of local wood. In fact, it would largely be dependent on yellow birch. The basis of an industry does, however, exist in the country for articles of local use in the medium price range. The heavy demand for school desks and assembly hall chairs should certainly be met by local manufacture.

It would appear entirely feasible for Newfoundland to encourage and foster handicrafts, so that individual skills may be developed and distinctive local furniture designed and manufactured. These handicraft activities may be eventually spread out in a number of small units—none of them reaching major factory proportions, but in all a fair number of people may be profitably employed. The Newfoundland Industrial Development Board was thinking along these lines when it recommended to the Government in 1944 the establishment of the National Handicraft Centre. This recommendation was adopted by the Commission of Government and, with the aid of the

Board, this institution was started in the following year and gave distinct promise of usefulness.

Christmas Trees For Export

In the neighbouring parts of Canada and in the United States, quite a sizeable industry has grown up around the cutting and marketing of Christmas trees. This is, of course, a seasonal industry, but its volume is quite substantial.

Ten years or more ago, a United States firm came to Newfoundland and commenced the cutting, bundling and shipping of Christmas trees to the United States. Its operations lasted for a number of years and approximately 300,000 trees per year were shipped.

In 1941, the operations of this company in Newfoundland ceased, exactly for what reason is not definitely known.

Since then the question of further Christmas tree cutting has been raised on a number of occasions, as it is the feeling of some that this industry should again be taken up by either local or outside interests. In this connection, the Board's investigations have led it to believe that it would not be possible for a local organization to cut and market Christmas trees in the United States on its own. The difficulties of competing with the established distributors in the United States would make such an undertaking extremely hazardous. It would, of course, be perfectly feasible for a local concern to cut and deliver trees to distributing firms in the United States under contract.

Of paramount importance, however, in any consideration of this industry is the wisdom of permitting young trees to be cut from public lands for this purpose. It is felt that indiscriminate cutting should not under any circumstance be permitted, but the decision as to whether or not any cutting should be permitted, and, if so, on what

scale and under what regulations, is a matter for Government, in consultation with competent foresters, to decide.

Utilization of Sawdust

In the field of wood utilization, a great deal of work continues to be carried on each year to develop ways and means of making better use of the large quantities of sawdust that occur from sawmill operations.

In earlier days, much of the sawdust, chips, and other so-called waste, coming from the sawmill, could be used as a fuel to provide steam for the operation of the mill. In recent years, however, gasoline, diesel, and electric power have gradually replaced the steam powered sawmill, and the problem of disposal of these wastes is as acute as ever.

The problem of sawdust disposal is much more acute in the case of the larger sawmills. The small mills can usually manage to dispose of a fair proportion of their sawdust and other wastes in the nearby community, or simply leave it to accumulate near the mill. The larger operators, or course, cannot do this.

As a rough rule one half ton of sawdust is produced from the sawing of 1000 board feet of lumber. For example, a mill sawing 10,000 F.B.M. per day would accumulate five tons of sawdust each day.

The total quantity of lumber sawn by all mills in Newfoundland in the year 1948 was approximately 62,000,000 F.B.M. On the basis of this figure there would have been produced 31,000 tons of sawdust—quite a substantial quantity of waste. This sawdust was, however, produced by some 800 sawmills of varying size, scattered throughout all parts of the island. Consequently, there is no one area where there is any appreciable concentration of sawmills or sawdust.

Some of the more promising methods of sawdust utilization, such as Wallboard manufacture, sawdust

briquettes (for fuel), wood flour, etc., all require large quantities of sawdust, a minimum of 5 to 10 tons of sawdust per day being necessary for briquette manufacture, and around 40 tons or more per day to manufacture wall-board.

It is clear, therefore, that, as far as the average small sawmill in Newfoundland is concerned, the utilization process referred to above can be of very little benefit. Where, however, fairly large quantities of dry sawdust are available or can be collected cheaply, there are quite a number of ways that have been found to turn wood waste into useful products.

Wood Briquettes

The first of these—fuel briquetting—consists of compressing dry sawdust, or small size shavings and chips, by means of a mechanical or hydraulic press, into a cylindrical shaped briquet around 4 inches in diameter and 1 foot long. It is also customary, in some briquetting processes, to add a binder material to the sawdust mixture to aid in adhesion. There are a number of briquetting processes that have been developed. Possibly one of the most widely known of these is the process known as "Pres-to-logs," in which sawdust, chips, and other wood waste, are put through a grinder or hammer mill to reduce them to uniform size. They are then dried to remove excess moisture (7% desirable), and are finally compressed into briquet form under very heavy pressure, no binder being necessary.

The manufacture of briquets from wood waste should be preceded by a thorough study of all the technical and economic conditions affecting the manufacture and sale of the product. For example, the amount and cost of wood waste available for processing must be studied, for if more than one machine can be used production costs can be substantially decreased.

In order to determine the relative value and thus the selling price of wood briquettes in a particular locality one has to calculate their fuel value in comparison with coal or any other competing fuels that are available. Wood briquettes have a heating value of 8,000 B.T.U. per lb. Bituminous coal has a heating value of 13,600 B.T.U. Therefore, to be competitive, briquettes would have to sell at $8000/13,600$ or $4/7$ the price of coal. This is a rough rule only and does not take into consideration other factors, such as furnace efficiencies.

Wallboard From Sawdust

During recent years, there have been a number of announcements concerning new processes for manufacturing wallboard from sawdust and other wood wastes. Upon investigation, a great number of these schemes were found not to have progressed beyond the laboratory or pilot plant stage. There are, however, several quite sound processes that have been put into commercial production, both in North America and Europe.

The type of board produced by these processes is not the familiar fibre insulating board, but is rather a hard board, with good strength characteristics, and may be surface finished with paper or veneers. A good core material for pulpwood manufacture can also be made by the same process.

Briefly, the process of manufacture consists of drying the sawdust to around 10% moisture content and reducing it to uniform size. To this raw material is then added one of the phenolic resins. The mixture is then subjected to heat and pressure in a roller press, and, if desired, surfacing materials such as paper may be added.

The main considerations affecting the establishment of such a plant in Newfoundland are, of course, availability of raw materials (upwards of 40 tons per day of dry waste), and finding a market to absorb the output of the

plant. Generally speaking, the Newfoundland market is not large enough to absorb the output of the average sized wallboard mill. Smaller plants usually do not compare favourably on a cost basis. Costs of plant machinery vary widely with different processes, but are generally from \$100,000.00 upwards.

Manufacture of Small Wooden Articles

The Industrial Development Board each year received a considerable number of enquiries concerning the possible manufacture of small wooden articles, such as axe and hammer handles, tool handles, clothes pins, dowels, snow fencing, toys, etc.

The economics governing the manufacture of all these items are pretty much the same and may be summarized in the following manner: Most small wooden articles of the type referred to above are usually made by power machinery, together with tools and jigs, specifically designed to carry out the necessary production operation. In certain cases, the sequence of operations may be automatic. It will be appreciated from the foregoing that production in large quantities is a "must", as not only are some of the machines required expensive, but once they are set up to produce a particular item a change-over cannot readily be made.

Many industries of this type obtain their wood requirements from the waste products of other manufacturers. For example, the cores resulting from the manufacture of veneer are very often purchased and used by the manufacturers of small wooden articles.

A mass market to absorb the output of such a plant is, of course, a necessity, and it is rather doubtful if the Newfoundland market alone could absorb the production of a plant set up to produce any of the items enumerated.

Production on a smaller scale, using less expensive equipment, or eliminating the use of certain power tools,

is hardly feasible, as by these methods production costs are higher and the items produced would not meet prevailing competition.

The possibility for marketing a substantial quantity of these products either in the other provinces or in the United States is worth investigating. Birch of the size prevailing in our forests would be quite suitable as the raw material for such an enterprise.

Wood Distillation

The distillation of wood is one of the oldest chemical processes. It has been carried out for centuries by those practising the craft in almost every part of the world. On the other hand, progress in the technique of operation has been very backward and the processes now predominating differ but little from those of antiquity.

The main product of wood distillation is charcoal. In many countries it is used as a domestic fuel, though its uses to-day also extend into the fields of metallurgy, in the chemical industry, in the manufacture of carbon bisulphide, in filters and coolers, in animal feeds, and as a fuel in railroad refrigeration cars. The by-products available from the wood distillation process include acetic acid, methanol, and acetone, tar and wood oils. In recent years, however, the synthetic chemical industry has demonstrated its ability to produce these products more cheaply and more efficiently than the older process and has largely captured the market. Practically the only product of the industry which cannot be made synthetically is charcoal itself.

The yield and quality of charcoal obtainable depends largely upon the kind of wood used. Thus a seasoned hardwood gives the best yield and the softwoods, like spruce and fir, give the lowest yield and poorest quality. In Newfoundland the most suitable wood for this purpose would be birch.

The types of kiln used vary greatly. The majority in use to-day are made of brick or steel and have an average capacity of 8/10 cords of wood. In recent years, however, considerable research has been carried out on the development of portable kilns and plants for continuous carbonization as distinct from the kiln or batch process. This latter method of operation promises definite economies.

In 1940, the New Industries Committee of the Commission of Government and the Anglo Newfoundland Company became interested in the possibilities of producing charcoal in Newfoundland and after preliminary investigation it was decided to purchase a $2\frac{1}{4}$ cord portable charcoal kiln with which to conduct practical experiments, half the purchase cost of the kiln being borne by the Government and half by the A.N.D. Company.

The kiln was tested first at Grand Falls and later in the forest at Lake Ambrose. To give some idea of the results of these experiments we quote herewith from a report by the A.N.D. Company, Limited:

During the early part of 1940 a $2\frac{1}{4}$ cord portable charcoal kiln was purchased from Laurentian Industries Reg., Montreal, half the landed cost being taken by the Newfoundland Government, and half by Anglo-Newfoundland Development Company, Limited.

The experimental runs were carried out at Grand Falls prior to sending the burner to the A.N.D. forest. The trial tests at Grand Falls covered the use of green and kiln dried wood and some 20 cords of birch were converted. The semi-dried wood gave better results, as the total conversion cycle was reduced from 76 to 68 hours. The yield from dry wood figured at 550 lbs. charcoal per cord of birch. However, the burning cycle experienced here for carbonization was 40 hours, as against 25 hours for Canadian practice.

This was due to the difficulty of getting uniform burning throughout the area of the burner, as well as using slabs instead of round wood.

The burning comparison of green and kiln dried wood was as follows:

	Green Wood Hours	Kiln Dry Wood Hours
Loading Time	8	8
Heating Time	10	6
Carbonization	42	40
Cooling	10	8
Unloading	6	6
Total	76	68

Coverage of Total Operations:

Number of burnings	8
Cords Green Birch used	17.25
Cords Air Dry Birch used	2.75
Pounds Charcoal produced	8450
Pounds Charcoal per burning	1056
Pounds Charcoal per cord	423

The burner was then shipped to Lake Ambrose, Millertown Division. The experiment here was five months air seasoned birch, split in junks. The observations covering this procedure were as follows:

Number of burnings	16
Cords dried birch	35.92
Cords per burning	2.25
Pounds Charcoal	23,672
Pounds Charcoal per burning	1,479
Pounds Charcoal per cord	659

Burning Cycle:

	Hours
Loading	3.53
Heating	5.23
Carbonization	31.25
Cooling	12.12
Unloading	3.12
	55.25

The cost of the Lake Ambrose experiment was:

	Total	Cost per ton Charcoal
35.92 cord wood	394.51	33.33
Gear	24.89	2.10
Meals	8.47	.72
Expenses	6.00	.51
Inward Freight	34.73	2.93
Bags	22.61	1.91
Wages	376.55	31.81
Sundries	15.59	1.32
Freight to Millertown Junction		
Per carload Charcoal	—	4.00
Cost		\$78.63

Details of Wage Distribution:

	Total	Cost per ton Charcoal
Erecting burner	18.55	1.56
Repairs	3.00	.25
Tending burner	165.04	13.95
Handling wood	69.88	5.91
Stowing Charcoal	44.95	3.79
Loading burner	40.16	3.39
Removing Charcoal	34.97	2.96
Cost		<u>\$31.81</u>

The Charcoal quality as produced showed as follows:

	Grand Falls	Lake Ambrose	Imported Sample
Moisture %	3.13	2.89	6.13
Ash % .....	.91	.98	1.42
Volatile %	18.96	18.77	6.37

As reported by Mr. Potts, of Millertown, the cost of charcoal was high, the wood cost being \$11.00 per cord, due to the long haul to the burner and the splitting cost. Under normal conditions and using round wood, it should not exceed \$5. per cord. An operator was kept on during the night as a fire safety precaution. It was also suggested that, in order to make a success of charcoal burning, it would be more economical to pass it over to some small holder.

It is evident from these reports covering the experiments that Charcoal production from portable kilns can be carried out, but the costs are high. One kiln produced some 2.6 tons per week, giving a yield of approximately 20%. No doubt, manufacturing Charcoal with two or three kilns, so that the burning cycles could be staggered to make a continuous operation, the production cost would be considerably lower, possibly below \$40 per ton.

These experiments, while valuable and quite interesting, can hardly be termed conclusive. It is felt that as the report states, manufacturing charcoal with two or three kilns so that the burning cycles could be staggered would have reduced the cost of production greatly. It would also appear likely that further economies could be effected over a period of time by a group operating kilns as a definite occupation as opposed to the experimental nature of the A.N.D. Company's work.

As a result of this work it may be assumed then that charcoal can be produced in Newfoundland using local

woods. The cost of the finished product in an actual operation will, of course, depend upon many factors, such as: skill of workmen—location of kiln—number of kilns used—using wood of correct size and moisture content, etc.

The main obstacle facing a prospective charcoal operation in Newfoundland would be marketing. The outlet for charcoal in Newfoundland itself, as far as is known, is at present negligible but with the availability of the product might be developed. Markets do exist, however, on the mainland of Canada and the United States, as well as in the United Kingdom. Sales of charcoal to any of these markets would, of course, depend primarily upon price and quality.

MANUFACTURE OF MATCHES

The Industrial Development Board received quite a number of inquiries concerning the possibility of manufacturing matches in Newfoundland. At least two local parties made serious efforts towards this end, and one individual in particular actually received assurance of certain concessions regarding customs and excise taxes from the Commission of Government on the basis of his plans for establishing a match manufacturing plant. None of these efforts developed beyond the planning stage, however, and in the past two years there have been no new developments or inquiries concerning this matter.

Newfoundland's consumption of matches appears to be around 100,000 gross boxes annually, with the Canadian mainland and Sweden as the principal suppliers in recent years.

Local woods, particularly aspen, are quite suitable for the manufacture of matches. The chemicals and other necessary raw materials would, of course, have to be imported into the province.

The investigations of the Board into this question

show that the smallest economical match factory would be one with an annual production of 120,000 gross boxes, and even a plant of this size is not so efficient a producer as some of the larger units. A plant capable of producing 120,000 gross boxes per year would require a capital outlay of upwards of \$100,000.00.

Under Newfoundland's former system of Government, and with the benefit of some form of tariff or excise protection during its early years, a small match plant might have been successfully established here. As a province of Canada these protective arrangements cannot be made and a local plant would be faced with severe competition from existing plants in other provinces.

OTHER FOREST PRODUCTS

According to estimates made by Donald Ross & Co., the productive forest area of Newfoundland is about 14,300 square miles. In addition to this there is an area estimated at 2700 square miles which is classified as forest but which is considered non-productive at the present time.

The principal forest species are spruce and balsam fir—with an unknown percentage of birch (both white and yellow) interspersed in varying degrees among the conifers. There are also small quantities of white pine and juniper.

Estimates, at the time of writing of the quantities of timber (spruce and fir combined) on the limits of the two paper companies, viz., Anglo Newfoundland Development Co., Ltd., and Bowater's Newfoundland Pulp and Paper Mills, Ltd., on other privately held timber limits, and on Crown lands are as follows:

	Paper Companies	Other Private Lands	Crown Lands
Total Cords	29,414,530	2,370,873	5,032,689

According to the paper companies, the annual increment based on a weighted average of their estimates per acre, which include fire, insect and other losses, is equivalent to 0.236 cords per acre of matured timber, or about 2.76% of their estimated merchantable timber inventory.

If this figure is applied to the estimated merchantable timber inventory of the two paper companies, an annual growth estimate of approximately 810,000 cords is reached. This is 120,000 cords greater than the average annual cut of the two paper companies for the past few years.

If the same figure (2.76%) is applied to the holdings of other private lands and Crown Lands, an annual increment of 230,000 cords is found. Against this, it is estimated that the annual cut on other private holdings and Crown Lands has been in the vicinity of 340,000 cords.

While all the figures quoted are in the majority of cases "good estimates" only, they do show clearly that it is neither advisable nor possible to increase to any appreciable extent the value of Newfoundland's forest products by adding to the number of existing paper mills or saw mills or by cutting a larger quantity of timber or by similar methods. The only hope of increasing the value of our forest industries lies in future development in the following directions: the finding of manufactured uses for a larger proportion of the raw material; the discovery of new methods that will enable us to utilize materials presently classified as waste or of low value; and, as far as possible, the avoidance of the marketing or use of our forest products in forms that bring a relatively small financial return. In other words, our available supplies of wood should, as far as possible, be turned into high grade products, such as newsprint, pulp, high quality dissolving pulps, wallboard, etc.; instead of being used as pitprops and firewood.

This problem is not by any means confined to Newfoundland; in fact it affects practically every forested part

of the world. As a result, a great deal of money and effort is being expended in trying to develop new products and new methods of utilizing waste. In addition, much progress has been made in the development of more efficient cutting methods and in the application of the science of silviculture so that the yield from existing timber areas may be increased.

Those connected with the forest industries in Newfoundland have been keeping a close watch on developments in other parts of the world and have not been backward in applying many new ideas and methods here. Among others, the Newfoundland Industrial Development Board has studied closely, and in several cases has made full scale investigations of, promising fields of growth. In the following paragraphs many of the possibilities will be examined.

Utilization Of Waste Products From Pulp And Paper Industry

It has been stated authoritatively on many occasions that the "largest waste in industry" occurs as a result of wood-chemical operations. A major portion of this so-called waste occurs in the form of the waste liquor which results from the manufacture of chemical pulp.

In Newfoundland, the method employed by the two paper companies is the sulphite process of chemical pulping. This process, as commonly practised, utilizes only about fifty percent of the wood raw material, and the non-fibrous wood components solubilized in the cooking process are allowed to run to waste.

There are a number of possible methods available to the manufacturer by means of which this waste sulphite liquor may be utilized. It may be dried and burnt as a fuel. Recovery of certain chemicals for reuse is another possibility. Still another consists of conversion of the waste sulphite liquor into other saleable forms and pro-

ducts. A great deal of progress has been made in recent years in all three of these fields, particularly the last. A number of products can be made from waste sulphite liquor, but, unfortunately, many of these products, such as vanillin and yeast, have a limited world demand in comparison with the tremendous production available from the pulp and paper industry.

Alcohol Production From Waste Sulphite Liquor

During the early years of the war, the Newfoundland Industrial Development Board, in conjunction with the two paper companies, devoted a great deal of effort to the investigation of the possibilities of producing alcohol from waste sulphite liquor. This process had been known and was in actual operation in Europe for many years. However, during the second World War it received considerable impetus. The first plant to produce alcohol from waste sulphite liquor in Canada was started in 1942.

In 1944, the Newfoundland Industrial Development Board, with the co-operation of the two paper companies, made arrangements for Dr. M. M. Rosten, an engineer with considerable experience along these lines and who had acted as a consultant on the construction of the first Canadian alcohol plant, to come to Newfoundland and investigate the possibilities of such an industry here.

The visit of Dr. Rosten disclosed that the technical aspects of alcohol production presented no problem. Briefly stated, waste sulphite liquor contains sugars derived from wood. The process results from the fermentation action of yeast on the sugars contained in the waste sulphite liquor. The alcohols produced by the fermentation action are then distilled off.

In 1944 (the time the report was prepared) it was estimated that one plant in Newfoundland could produce 900,000 Imperial gallons of alcohol on the basis of 65% recovery of sulphite liquor with a capital cost of

\$700,000.00. With a sulphite liquor recovery of 85% the approximate capital cost would be \$800,000.00, and the annual production 1,200,000 Imperial gallons of alcohol. Estimates of the cost of producing alcohol in Newfoundland were in line with those of similar plants in other countries. The cost factor therefore presented no difficulty.

At the time these investigations were made there was an unprecedented demand for alcohol, chiefly for war purposes—and it was the thought of those concerned that it might be possible to market the greater proportion, if not the entire production, of a Newfoundland plant in this manner

To construct a plant at considerable cost, without being able to see an assured market ahead for its product in the post-war years, would definitely be unsound. Therefore long-range studies were made of possible markets, both export and domestic, and also of the possible trend in prices of alcohol.

The possibility of mixing a percentage of power alcohol with gasoline for use as a motor fuel in Newfoundland was considered. This practice had been used in certain European countries for many years, apparently with considerable success, but was ruled out for application to Newfoundland by reason of excessive costs and other difficulties.

The question of producing potable alcohol was also briefly looked into.

When the export of industrial alcohol to world markets was investigated it was found that, pre-war, the cheapest method of producing alcohol was from molasses imported from the West Indies, Cuba and other adjacent countries. Alcohol produced from corn is also relatively inexpensive. It was thought that, upon the return of post-war conditions, the price of molasses would again fall to

lower levels and that alcohol produced from it could be sold in many areas at a price lower than manufacturers using other processes could meet. Present day conditions bear out the accuracy of this forecast.

Yeast Products

Another process closely allied to the method of alcohol production is that of yeast manufacture from waste sulphite liquor. For a number of years there have been plants in Canada and elsewhere producing baker's yeast by this method, and their production and sales of this yeast appear to have been quite successful. The minimum economic size of plant produces around 1,500,000 lbs. of yeast annually. Newfoundland's requirements, of course, do not approach this figure.

There is, however, another type of yeast, the production of which has received considerable attention in recent years, namely, "food yeast" (*Torula Utilis*). This product may be manufactured from waste sulphite liquor, and, for many years, plants using this method have been operating in Europe. During the war years in Germany, food yeast derived from the wood sugar contained in waste sulphite liquor provided an important source of protein for human and animal consumption.

The method of food yeast manufacture from sulphite waste liquor is, briefly, as follows:

- (a) Recovery and screening of waste liquor from blow pits.
- (b) Recovery of SO_2 —if found commercially justified
- (c) Neutralization of sulphite liquor, and cooling to 86°F .
- (d) Addition of nutritive salts required for growth of yeast.

- (e) Fermenting by continuous method of fermentation, aeration and vigorous mixing.
- (f) Recovery of yeast by centrifuging.
- (g) Washing of yeast and centrifuging.
- (h) Evaporation or concentration of yeast.
- (i) Drying.
- (j) Crushing and bagging for shipment.

According to the best information available, a plant to manufacture dry food yeast from liquor in a pulp mill of 100 tons daily capacity would cost from \$600,000 to \$800,000. A plant of this size could produce around 10 tons of dried yeast daily, with costs of production around \$80 to \$100 per ton.

The present day status of this process of manufacture and its product seem to be still in the experimental stage as far as North America is concerned. Yeast contains proteins in amount equal to about half its dried weight. It is also a rich source of the B vitamins, including B1, riboflavin and nicotinic acid. Fed in proper quantities and together with other essentials, it has been found to be an acceptable and generally palatable food for humans and animals. Because of the vast potential market for such a product it would appear to be a very desirable subject of further research by the Pulp and Paper Industry.

AGRICULTURE

Report On Proposal To Establish A Flour Milling Industry In Newfoundland

INTRODUCTION

In July 1947 the Newfoundland Industrial Development Board made a brief study of the economic possibilities of establishing a flour milling industry in Newfoundland. The conclusions of this investigation were that such an industry could not readily operate in Newfoundland on a competitive basis. The facts then available did not make it appear worthwhile to pursue the matter in more detail.

Since then, Newfoundland has changed its constitutional status to become a province of the Dominion of Canada; the issue of establishing a flour mill in Newfoundland has been raised on several occasions; and in October of this year the Newfoundland Federation of Labour formally requested this Board to investigate the possibilities of establishing a flour milling industry in Newfoundland and to submit a report on the merits or demerits of the proposition. (Copy of Newfoundland Federation of Labour letter, together with attached resolution is reproduced at the end of this paragraph.) For the reasons outlined above, the Newfoundland Industrial Development Board felt that it would be in the public interest to make a further study of the possibility of establishing a flour milling industry in Newfoundland, bearing in mind the many changes that have taken place since the previous investigation.

October 22nd, 1949.

Mr. L. J. Harnum,
Secretary,
Nfld. Industrial Development Board,
St. John's, Nfld.

Dear Sir:

I am directed to forward you a copy of resolution adopted at this year's convention of this Federation held at Corner Brook, dealing with the establishment of a flour mill and a sugar refinery.

It is the desire of this Federation that your Board fully investigate the possibilities of establishing such, and we would appreciate a report from you on the merits or demerits of the proposition.

Yours truly,

W. J. MAY, Secretary.

RESOLUTION

Whereas the high cost and scarcity of milk and pure butter constitutes a barrier to better health standards in the rising generations of Newfoundlanders; and

Whereas this is mainly caused by the high cost of milk feeds used by farmers; and

Whereas a local Flour Mill and Sugar Refinery would be in a position to supply these feeds at a much less cost than can be purchased elsewhere;

Be It Resolved that in the interests of an improved economy and better health standards for all, those plants should be started at once and that the Government be petitioned to subsidize the beneficial and worthy undertakings which would also make use of local power and labour.

OUTLINE OF THE FLOUR MILLING PROCESS

A grain of wheat consists essentially of three parts: first the bran, which comprises the several outer coverings; secondly, the germ, which is the embryo of the new plant; and, thirdly, the endosperm, which is the part that is ultimately made into flour.

To the miller the endosperm is, therefore, the most important part of the grain. Bran contains matter whose inclusion in the flour, even in small proportions, would spoil its colour; both bran and germ contain substances which would injure its baking quality. The first object of the milling process is, therefore, to isolate the endosperm in as pure a state as possible, so that it can be ground into flour uncontaminated by either germ or bran.

The endosperm normally represents about 85% of wheat grain, the germ about 2.5% and the bran about 12.5%—though the proportions vary in different kinds of wheat. Thus, if the milling process were 100% efficient it would yield about 85% of pure flour uncontaminated by bran or germ. This is, however, an impossible ideal. In actual practice, the most efficient and well run plants can only extract about 70% pure flour.

The process of flour milling is one that requires a considerable amount of technical knowledge and experience on the part of those responsible for its operation, as well as a considerable capital expenditure in plant and machinery.

For descriptive purposes the flour milling process may be briefly outlined under four main headings:

(1) *Reception and Storage of Wheat*

A plant in Newfoundland would have to be located at tidewater, and, among other things, would require a pier capable of accommodating ocean going vessels; a ship elevator discharging plant of either the pneumatic or

bucket type; storage silos of adequate capacity, automatic weighing equipment, etc. Several different types of wheat are necessary and are blended to produce flour of the proper characteristics.

(2) *Cleaning and Preparing Wheat For Milling*

This stage of the process involves the removal of impurities and foreign matter from the wheat; washing and adjusting moisture content, blending different types of wheat and generally preparing the wheat for the next stage, which is the actual milling process.

(3) *Milling the Wheat Into Flour and By-products*

The flour milling process is designed to open up each grain of wheat, scrape off the endosperm, remove the branny particles from it as completely as possible, and grind the practically pure endosperm into flour. The milling process is essentially one of grinding and separation, and, though it may appear simple from the foregoing description, it is actually a highly complex, continuous, and practically automatic process.

Products resulting from the milling process consist of (1) various grades of flour, (2) millfeeds, consisting of bran, shorts and middlings. Bran is the outer covering of the wheat kernel. Shorts is a mixture of fine bran particles, wheat germ, and a small proportion of fibrous flour. Middlings is a mixture of small proportion of fine bran particles, wheat germ, and a large proportion of fibrous flour.

The average ratio of production is slightly more than 70 lbs. of millfeeds to one barrel (196 lbs.) of flour.

Generally speaking, one barrel of flour is produced from $4\frac{1}{2}$ bushels of wheat.

(4) *Packing, Storing and Distribution
of finished Products*

This part of the process consists mainly of bagging the flour and by-products—this is usually accomplished by semi-automatic weighing and bagging machines. Mechanical conveying and stacking apparatus is required to move the bags to the mill warehouse, which is an integral part of the plant and which must have a capacity adequate to the needs of each particular mill. A mill in Newfoundland would probably require the services of a railroad spur or siding, and truck loading facilities, so that its finished products and raw materials might go and come by water, rail, or truck.

CAPACITY AND LOCATION OF FLOUR MILLING INDUSTRY

Newfoundland's annual consumption of wheat flour is at present in the vicinity of 400,000 barrels. A plant capable of supplying the entire local market would, therefore, require a production of slightly over 1000 barrels, per day.

Figures published in 1948 by the Dominion Bureau of Statistics on the Canadian flour milling industry show the following summary of mills by size groups and rated capacity:

Rated Daily Capacity	Number of Mills	Barrels of flour per 24- hour day
5,001 to 13,000 barrels.....	5	39,100
1,001 to 5,000 barrels.....	16	39,520
501 to 1,000 barrels.....	11	8,950
301 to 500 barrels.....	14	5,840
101 to 300 barrels.....	42	7,810
51 to 100 barrels.....	47	4,195
50 or less barrels.....	39	1,619
	<hr/> 174 <hr/>	<hr/> 107,034 <hr/>

Analysis of these figures reveals that 5 mills, or 3% of the total number, are capable of producing 36% of the total output, and, further, that 21 mills, or 12% of the total number, can produce 73% of the total output. These mills are all in the 1001-13,000 barrels per day category, with the majority having a rated capacity of over 2000 barrels per day.

It will also be noted that there are a considerable number of small mills in existence, and the question that is immediately raised is—where do these small mills fit into the picture, and, how can they compete in costs with the larger mills?

It has been stated that one of the peculiarities of the flour milling industry is that the smaller mills can, under certain circumstances, operate at a proportionately lower cost than the larger mills, and can consequently sell their products at a lower price.

The information available, however, shows:

1. That the bulk of the independent mills are located in Ontario and the Prairie Provinces—in other words, in wheat growing regions, or at strategic points along the various routes that wheat follows on its way east.
2. That the small, or independent mills, serve a limited territory and have been selling only to one or two customers, and thus are not subject to the heavy expenses incurred by the larger mills in maintaining a substantial sales force and on national advertising.
3. That in many cases the small mills are old family businesses that have been in operation for many years.
4. The number of small mills in existence is declining each year.

In 1934 there was a total of 412 small flour mills in Canada. In 1947 that number had dropped to 155.

A further study of data prepared by the Dominion Bureau of Statistics shows that of the 21 larger mills—(1001 barrels and upwards daily capacity)—two mills are located in Quebec Province, seven in Ontario, two in Manitoba, three in Saskatchewan, seven in Alberta. There are no mills of any size in either the Maritime Provinces or British Columbia.

The reasons for this location pattern are extremely interesting inasmuch as they throw considerable light on the question of a Newfoundland mill.

All authorities state that the primary consideration in the location of a flour milling industry is—"Proximity to the raw materials and markets." The mills are located either in wheat growing regions, or, what is probably more important, near centres of population with large flour consuming urban markets and substantial markets for farm feeds near at hand, or for a combination of both these reasons.

A flour mill situated in either of the coastal regions will always be at a disadvantage, for wheat has to be brought all the way from the interior, and, after milling, a portion of the flour and practically all of the by-products have to be shipped back into the interior again.

It may be of further interest to note that in the United States the same pattern of location applies.

Construction Costs—Mill And Machinery

Present day costs of construction for a modern flour mill are usually estimated to be around \$1200.00 per barrel daily capacity. On this basis a 1000 barrel per day mill would cost approximately \$1,200,000.00 exclusive of the cost of site and wharf.

We have, however, recently come into possession of a financial statement showing the actual cost of a mill just completed in Western Canada. This shows a total cost of

slightly over \$3,000,000.00 for a mill with a daily capacity of 1200 barrels. This gives a construction cost of approximately \$2500.00 per barrel capacity.

Freight Rates

Due to the absence of published freight rates on wheat shipments to Newfoundland and for other reasons it is not possible to make a complete study of the transportation factors affecting the establishment of a Newfoundland mill. We have, however, obtained the following information during the course of this study:

(1) A Newfoundland mill would bring its grain by water from Montreal, or possibly from Fort William. It is not possible to determine the transportation charges for such a movement, but it is obvious that some method would have to be found to work in full return cargoes for the steamers so that transportation charges might be kept at an absolute minimum. One or two such schemes have been put forward from time to time and the first is that grain boats en route from Montreal or other Canadian ports to the United Kingdom could drop off part cargoes at Newfoundland ports. In this case transportation charges would in all probability be at least equal to those applying for the full Montreal-United Kingdom voyage. In addition, difficulty might be experienced in obtaining ship-owners to co-operate in this plan.

The second proposal is that steamers at present carrying coal from Sydney, N.S., to Montreal and returning light might be used to transport return cargoes of grain to West Coast Newfoundland ports. Once again the co-operation of the shipping and other companies concerned would have to be obtained.

(2) During the season of closed navigation on the St. Lawrence River grain would have to be brought in from St. John, N.B., or Halifax, at proportionately higher freight rates than by the former method. An alternative would be

for the Newfoundland mill to bring in sufficient grain in the autumn to tide it over the winter months. This method would require extensive storage facilities and might occasion disadvantageous grain purchases.

(3) Flour mills located in central or western Canada bring wheat to their mills by water or rail, and after milling ship the flour direct to consuming centers in Newfoundland on *through* freight rates. In addition, there is in force what is known as a "milling in transit" freight rate, which applies to "all rail" movements and has the effect of giving the miller a low combined rate on wheat movements to the mill and on flour and by-product shipments from the mill.

The only conclusion that can be arrived at with the information available is that under the *most favourable* circumstances over all transportation charges on wheat to the mill and on flour and by-product shipments to consuming centers would be about equal in the case of a Newfoundland mill and mills operating in central and Western Canada. We cannot see how a Newfoundland mill would have any definite overall transportation advantages. It might be on a competitive basis with the outside concerns when distributing in the immediate vicinity of the mill, but would be at a disadvantage when shipping to other parts of the Island.

Utilization Of By-Products

A 1,000 barrel per day flour mill would turn out in the course of a year's operations some 16,500 tons of wheat-feed (bran, shorts and middlings). Using for rough calculation 50,000 tons of wheat the breakdown would be:

50,000 Tons Wheat

Flour, 1st and 2nd. Grade

(33,500 tons	190,000 sacks Bran.....(8500 tons)
(or	145,000 sacks Shorts.....(6500 tons)
(380,000 bbls.	33,500 sacks Middlings.....(1500 tons)

The important part played by by-products in the flour milling industry is stressed by all authorities. It is stated that the price of flour is mainly controlled by the price of wheat and the price obtained for by-products. The price of flour as charged by mills goes up as feed prices drop, and decreases as feeds increase in price.

The annual imports of all feeds of various kinds into Newfoundland, averaged out over the five year period 1943-1948, are as follows:

	Yearly Average
Scratch Feeds	70,471 sacks
Dairy Ration	68,115 "
Laying Mash	41,202 "
Corn Meal	27,353 "
Bran	13,156 "
Hog Feed	11,719 "
Horse Feed	6,600 "
Cracked Corn	3,533 "
Middlings	2,860 "
Barley	1,580 "
Beet Pulp	1,438 "
Calf Meal	1,162 "
Gluten Meal	1,080 "
Oil Meal	1,000 "
Alfafa Meal	260 "
Bone Meal	20 "
	<hr/>
	251,549 "
	<hr/>

From these figures it will be seen that Newfoundland's requirements of both bran and middlings are 16,016 sacks (800 tons). Even allowing for the shortage of certain types of feeds that occurred during part of the 1943-1948 period the annual consumption would not at present be over 1000 tons.

It must be borne in mind that mixed dairy and poultry feeds, which make up the greater portion of Newfoundland's requirements are largely composed of meal and grain other than those resulting as by-products of a flour mill.

The percentage of bran, shorts or middlings used in a particular type of feed varies greatly—in some cases none at all is used. But even if the overall percentage were to go as high as 50% (which it does not) a mill in Newfoundland would still have a surplus production of over 9000 tons of bran, shorts and middlings to dispose of each year. It would not be possible to dispose of this surplus on the mainland, and there does not appear to be any other outlet readily available.

Disposal Of Low Grade Flour

In milling the grade of flour required for the Newfoundland market it would be necessary to remove a certain portion of low grade flour. There is a market for this type of flour in central Canada for industrial purposes, but none at present in Newfoundland.

Marketing Difficulties

Consumer demand for flour in Newfoundland has, over a long period of years, run largely to brands, and once preference for a particular brand name of flour has been established it is very difficult to persuade the consumer to make a change. A new flour entering the market would only procure a share of the local demand, how great a share obtained would be open to conjecture.

General Market Out For Milling Industry

Canada has for many years had a flour milling industry with a rated capacity and annual production far in excess of domestic requirements. The industry is, therefore, dependent to a substantial degree upon export markets to keep its mills running at a continuous high level of pro-

duction. A modern flour mill forms a single automatic unit working day and night six or seven days a week. To shut down or restart the mill is a major operation never performed unnecessarily. When considering the future market outlook it may be of interesting to quote from a recent issue of the "Financial Post":

"Declining export markets were mainly responsible for the drop of 16% in output of Canada's flour milling industry in the crop year ending July 31, 1949.

"Total production was 20.3 million barrels in the 1947-48 year and was the lowest since 1941-42. Milling capacity of the industry is said to be approximately 30 million barrels annually. The weighted average of working capacity for the latest crop year was 64.3% compared with 81% for 1947-48.

"Substantial reductions were also seen in output of mill feeds and rolled oats. Millfeeds production totalled 693,466 tons in 1948-49, down 173,258 tons from the previous year's output of 866,724 tons.

"Exports of wheat flour in the first nine months of 1949, totalling 7,379,114 barrels, were down 17.5% from the corresponding period of 1948, 48% from the record of 14,209,858 barrels established in 1947. In 1948 wheat flour exports averaged 1.03 million barrels a month compared with 1.5 million in 1947. This was below the wartime average of 1.1 million barrels, but still well above the 1938 low of 330,000 barrels per month.

"Domestic business, by reason of the limited export business available, is becoming increasingly competitive as millers endeavour to get business in order to keep their mills in operation. Price cutting has developed in the domestic field, particularly for bakers' business, resulting in paring of profit margins. Earnings of Canadian flour milling companies for the fiscal year ending in July may show a drop of at least $33\frac{1}{3}$ from the previous fiscal year it is estimated, and, if price cutting continues in the domestic field, further profit declines can be anticipated in the current fiscal year."

To be of value to the people of Newfoundland, a flour milling industry or any other industry would have to be capable of giving the Newfoundland consumer flour and by-products at a price cheaper than, or at least equal to, the prevailing price. Except for the addition of extra freight charges flour prices in Newfoundland to-day are on the same level as those prevailing in other parts of Canada. The facts before us do not show that a mill in

Newfoundland could sell flour at cheaper prices than are at present in force.

A second argument for a flour mill in Newfoundland might be that it would create labour for the people of the Province. A flour mill is not a large employer, as the nature of the operation requires the extensive use of automatic machinery rather than labour. In 1947 in Canada the average number of employees and staff per plant worked out at 35. A 1000 barrels per day plant would probably employ 40/50 persons.

CONCLUSIONS

For the reasons outlined in this report the Newfoundland Industrial Development Board feels that the establishment and operation of a flour milling industry in Newfoundland would be fraught with great difficulty.

Manufacture Of Animal Feeds

There has been considerable interest in the possibility of producing or mixing animal and poultry feeds in Newfoundland. This interest derives mainly from (1) a general belief that the costs of animal feeds in Newfoundland are relatively higher in price than in the other provinces (2) the fact that farmers in Newfoundland have to feed their livestock and poultry a higher proportion of imported feed than farmers elsewhere due to the scarcity or absence of home grown feeds. This applies chiefly during the winter months but it is also a generally accepted fact that there is insufficient pasturage for animals in summer time as well.

Both these factors are put forth as the chief reasons for the higher costs of farm products in Newfoundland.

The over all problem of pasturage, feed, and the resulting cost of farm products in Newfoundland is quite a broad one and far beyond the scope of this chapter. All that will be attempted in the paragraphs to follow is an

outline of some of the more important factors affecting the possibilities of producing or mixing animal feed stuffs in Newfoundland.

In the chapter on Flour Milling it was shown that the establishment of a flour mill in Newfoundland would not go so far as is generally believed towards solving the problem. The reason for this was that the by-products of flour milling are only used in animal feeds in relatively small proportions, there being a great many other materials needed to make a balanced feed. To illustrate further, the following is a list of ingredients used in making up (1) a typical dairy ration, (2) a typical poultry egg mash.

Ingredients for dairy ration are: fish meal, salt, irradiated yeast, hominy feed, dehydrated alfalfa meal, bran, cereal grass, cottonseed meal, corn distilleries dried grain, linseed oil cake meal, soyabean oil meal, crimped oats, crimped barley, wheat distilleries dried grains. Ingredients for poultry egg mash are: oatmeal, oat shorts, powdered milk, hominy feed, cereal grass, dehydrated alfalfa, fishmeal, meat meal, ground barley, bran, shorts, salt, pulverized oats, fish oils.

It will, of course, be appreciated that the ingredients making up a particular type of feed vary considerably, depending upon the formula of the individual manufacturer. In general, however, each type of feed must provide a balanced ration for the animal for which it is intended. This involves the proper mixing of the various ingredients so as to ensure a correct proportion of protein, carbohydrates, fats, mineral matter and vitamins. The feeds must, in addition, contain the correct amount of bulk and be both palatable and digestible.

The manufacture of animal feeds may be said to involve two distinct stages. First of all there is the manufacture of certain raw materials. This stage is normally

undertaken only by specialty firms or by the larger companies.

The second stage of manufacture involves the preparation and grinding of the various grains and cereals and the mixing or blending of the different raw materials together in the desired proportions for the various types of feed. A mixing plant carrying out the secondary operations described above would be the only type of plant that could be considered suitable for Newfoundland.

Whether or not such a plant might be economically possible would depend chiefly upon whether the bulk handling and transportation to Newfoundland by water carrier of the various raw materials required for feed manufacture would show a definite cost advantage over feeds manufactured by mainland firms and shipped to Newfoundland under established rail and water tariffs.

While dealing with transportation matters it should be noted that there is at present in force a freight assistance policy of the Federal Department of Agriculture, under the provisions of which the transportation of Western grains and mill feeds to Eastern Canada and British Columbia, when used exclusively as feed for livestock or poultry, receives a freight subsidy. This policy applies to shipments to Newfoundland by both rail and water, and the amount of freight assistance at the time of writing is: "\$5.50 per ton from Fort William or Port Arthur to Montreal, plus the remainder of the actual through car lot freight charges to destination east of the Montreal freight rate zone." These additional freight charges are at present \$18.90 per ton to St. John's and \$17.10 per ton to Corner Brook. It should be emphasized that this freight assistance policy does not apply to all the raw materials necessary to make up a feed, but only to Western grain and mill feeds.

A feed mixing plant in Newfoundland would have to obtain nearly all its raw materials from various sources,

both in the United States and the mainland of Canada, and possibly elsewhere. The only materials locally manufactured that could be used are fish meal, cod liver oil, and brewers grains. The percentage of any one of these commodities used in any particular type of feed varies considerably, but in general it may be said that the major portion of the raw materials (approximately 80%) would have to be brought into the Province. The fact that Newfoundland produces no appreciable quantity of cereals or grains that could be used in the production of feeds is a major disadvantage.

Newfoundland consumes from twenty-five to thirty million pounds or from 250,000 to 300,000 sacks of various types each year. A breakdown of the imports by types is shown in the chapter on Flour Milling. This quantity of feed for manufacturing purposes is not large and could be produced by a relatively small mill.

Blueberry Industry

In 1946, a committee of the Newfoundland Industrial Development Board prepared and issued a report on the blueberry industry of Newfoundland. A summary of the report is given in the following paragraphs as it is thought that much of the information contained in this document is still pertinent.

The blueberry industry is one of the so-called smaller industries whose continuation and expansion are of great importance to the economy of Newfoundland. It provides a means of increasing the earning power of the people and requires very little expenditure on the part of the prime producer, the picker. The women and children are enabled to contribute to the family income at a time of the year when weather conditions are usually favourable.

Starting from small experimental operations in 1927, the industry showed a steady long term increase up to 1939, when a total of 6,224,280 lbs. of blueberries, valued

at \$403,490, were exported. There were considerable fluctuations both in quantities and values in the years between 1927 and 1939, but until the outbreak of war there was a steady upward trend.

A sudden demand for wartime services of various kinds completely upset the production of blueberries. With employment at peak levels people were more inclined to enter other occupations. In the eight years from 1933-34 to 1940-41, the average annual production of blueberries exported was above four million pounds. In the next four years the aggregate was under four million pounds. A business worth about \$400,000 when berries were approximately 6½c. a lb. shrank to \$154,000 in a year when the price was close to 20c. a lb.

With the falling off of production in Newfoundland, buyers in the United States were forced to go without their supplies or get them elsewhere. The absence of Newfoundland blueberries gave firms in the other Provinces, notably Quebec and Ontario, an open door to the United States markets, and their production is now many times as much as the Newfoundland production was at its peak. To build up the blueberry industry in Newfoundland and put it on a sounder basis, it is felt, requires the stressing of three particular points. These are: (1) public education. A well organized campaign is needed to impress upon everyone concerned the fact that Newfoundland must increase her exports to exist; to point out that there is need for picking wild fruit to the greatest extent as it is the one crop which requires practically no cultivation and very little in the way of equipment to gather, that only more stable production and consistent quality will enable Newfoundland to retain its place in the market. (2) Revitalization of old grounds. A very large proportion of the berry grounds are now covered by bush growth and no longer give the yields of berries which they did formerly. A small beginning was made jointly by the exporters and the De-

partment of Natural Resources in burning over berry producing areas. This process requires a lapse of several years before the burnt grounds again become productive. While initial experiments were encouraging they have not been continued owing to the war, and they were only conducted on a very small scale. A large-scale long-term plan for the systematic burning of berry grounds should be drawn up as soon as possible and should be carried on consistently for a number of years if it is to be of any value.

(3) Opening up of new grounds. There are undoubtedly many areas in Newfoundland upon which there are berry grounds. These are not touched at present because they are remote from centers of population or are so difficult of access that they are useless. Many of the so-called country roads have been allowed to fall into such a state of disrepair that trucks and horses cannot pass over them with safety. Small bridges have fallen down and have been allowed to remain in that condition. These roads and bridges must be maintained in order to permit berry grounds. A comprehensive survey should be made immediately with two objects: (a) To ascertain the location and extent of the berry grounds not yet opened up and (b) To co-ordinate a development programme of the Department of Natural Resources and the Highroads Department so that communications to berry producing areas may be improved.

The Board, in its efforts to assist in the expansion of the local blueberry industry, has also made investigations into two other possible fields of growth. Information was gathered from as many sources as possible on the canning of blueberries. This is being done only on a very small scale in Newfoundland at the present time, but, if proper equipment and methods were to be used, there would seem to be no reason why the canning of blueberries should not become a substantial industry, with excellent prospects of exporting the tinned fruit to the United States and other markets.

Another product that might be developed by research and experimentation is a blueberry juice that could be tinned or bottled in a manner similar to other fruit juices.

The Board also gathered and made available to interested parties all possible information on the cultivation of blueberries. This is a new but thriving industry, particularly in the United States, and seems to hold great promise for the future.

The information available would seem to indicate that the acid soil of Newfoundland would be ideally suited to blueberry culture and also that the climatic conditions would present no great problems.

There are at present a great many varieties of cultivated blueberry available, and hardier and more productive varieties are being produced all the time. These berries, in general, are much larger in size than the wild fruit and have a very attractive flavour.

In a bulletin on this subject, the Experimental Station of the Department of Agriculture at Kentville, N.S., had this to say concerning its work on blueberry culture:

"From the work at Kentville during the past few years it would appear that the cultivated blueberry offers considerable possibility to the grower. So far it has proved hardy and does well under favourable conditions.

"The flavour of the cultivated blueberry is good, and on account of its large size it commands a premium price over the wild blueberry. It tends to be later in cropping than the wild blueberry. In fact, one seedling plant at Kentville, of excellent size and quality, matures its fruit around the first of October.

"As pointed out, a few varieties have averaged over two quarts per bush for the past two years. With 1815 plants per acre, a large crop might be expected. It has been reported that a small shipment of cultivated blue berries shipped from Yarmouth brought 45 cents per quart during the past year. A plant should produce a commercial crop in its third year. The life of the bush seems to be indefinite. With care, a good plantation should be a source of revenue for many years."

In conclusion, it should be pointed out, however, that any expansion in the blueberry industry of Newfoundland

depends primarily upon an adequate crop being harvested each year. This, it would seem, is the greatest handicap to progress at the present time.

Cultivation Of Cranberries

While there seems to be no doubt that the present partridge berry, or lingon berry, industry in Newfoundland could be expanded both in quantity and value, there is another possibility that deserves consideration, namely the cultivation and possible processing of a similar berry—the cranberry.

Several years ago, the Board was asked to investigate briefly certain aspects of cranberry growing with a view to its possible application to Newfoundland. The Board gathered a good deal of information and published data from reliable sources, and was greatly aided also by a memorandum, prepared by an official of the Newfoundland Department of Natural Resources in 1938, on the same subject.

The cranberry growing industry is centered chiefly in the State of Massachusetts and is carried on to a lesser extent in the other New England States, in Wisconsin, on the coast of Oregon, and in Eastern Canada.

Since its inception over one hundred years ago, the industry has grown up into a highly organized business in which skillful and resourceful management has brought worthwhile returns.

It is neither the purpose nor the intention of this review to go into the details of cranberry growing, but merely to set down some of the facts obtained by the Board concerning the possible application of this industry to Newfoundland. However, to help clarify the picture, a brief outline of the principles of cranberry growing is also given in the following paragraphs.

Cranberries are grown on low bog land which must

have the right kind of acid peat soil. *Sphagnum* moss bogs are not desirable and should not be considered.

Among other things, the bog should be located at or near a stream sufficiently large to allow for flooding, when required, by gravitation. Cranberry bogs are flooded with water periodically (1) to protect the vines, bloom and fruit from frost, (2) to prevent winter injury, (3) to control weeds, insects and diseases, and (4) for irrigation.

The third essential factor for cranberry growing is a nearby and adequate supply of loam free sand. The chief purposes for which sand is required are: (1) To provide a growing medium for root development, and (2) To assist in protecting the plants against frost and weeds. Ocean sand is not always desirable but may be used under certain circumstances.

A bog selected as suitable for cranberry growing must first of all be cleared of trees and brush. Then, in the spring, when the frost is out of the ground, a drainage ditch is dug around the bog and the area is drained of water. All the stumps should be uprooted and burned, and the soil should be "turfed" or turned up, cleared and levelled.

It is also necessary to construct a system of dykes and dams to hold water in reservoirs and to maintain the bog in a flooded condition whenever necessary.

The next stage consists of sanding the bog to a depth of three or four inches over the entire area. After this has been completed, the bog is ready for the planting of the vines. Cuttings taken from young, healthy plants are preferred to the whole plant. The most suitable variety for Newfoundland conditions would probably have to be found by experience and experiment.

After planting, the newly prepared cranberry bog requires a great deal of attention and must be kept free of weeds and grass. It must also be flooded during the winter

months and whenever necessary to provide protection against frost, insects or disease. Resanding is carried out periodically, and spraying or dusting with insecticides is also necessary.

It will be seen from the above that cranberry cultivation is an occupation that requires a considerable amount of skill, time and effort, as well as adequate financial resources. This latter point will be more readily appreciated when it is realized that a newly prepared bog does not come into full bearing until the fourth or fifth year. This factor in itself points up one of the major difficulties to be overcome in introducing cranberry growing on any scale in Newfoundland. In all probability the best approach to the problem would be either to try and interest a firm already established in the industry to extend its operations to Newfoundland, or to encourage the formation of a local organization, with adequate financial resources, which could bring in skilled growers in the first instance and train local labour to replace them gradually.

Because of changes from time to time it is always rather difficult to quote costs, but, for purely illustrative purposes, the following is given: Some years ago in Nova Scotia a sixteen acre bog was purchased, cleared, ditched, sanded, dyked and planted for the sum of \$4,500. A few years later this bog was yielding thirty barrels per acre, and the selling price of cranberries was in the region of from five to seven dollars per barrel. As the cost of maintenance is small it will be seen that this bog was bringing in an adequate return to the owner.

Cranberry growing has a number of factors in its favour, some of which are outlined briefly below:

- (a) It does not compete with other type of farming.
- (b) The cash returns are liberal compared with the work involved.

- (c) It uses land that is unsuitable for other agricultural purposes.
- (d) The fruit is easily picked and handled and may be stored for long periods without undue risk of spoilage.
- (e) The demand for the product would appear to be steadily increasing.

The average yield of cranberries per acre in Massachusetts runs around 2500 lbs. though some of the better bogs yield up to 15,000 lbs. The berries are sold as fresh fruit as well as in the preserved form, though to-day the trend is more and more towards canning or preserving in glass jars in various forms such as: cranberry sauce, cranberry juice cocktail, cranberry-orange marmalade.

This list of products, incidentally, gives a good indication of what is being done elsewhere in the preserving of fruits or berries. There seems to be no valid reason why the present Newfoundland partridge berry, which is available in sizeable quantities and is exported each year mainly as whole fruit, could not be similarly processed. Processing would increase the value of the industry to Newfoundland and would provide additional employment. Information on the processing and preserving of these fruits is available through the Federal Department of Agriculture, as well as other agencies.

MINERALS

Utilization of Slate Resources

Early in 1946, the Newfoundland Industrial Development Board entered into negotiations with the Roofing and Building Supply Co., of Edinburgh, concerning the possibility of re-opening the slate quarries of the Trinity Bay area.

As up to date information concerning the extent and value of the slate deposits of Newfoundland was not available, and as no information was at hand which would show the possibility of producing slate for export to the United Kingdom, it was decided that a person qualified to carry out such a survey should visit Newfoundland at the earliest possible date.

In May 1947, Mr. Owen Giller, who for many years had managed some of the larger Welsh slate quarries and had extensive experience in the industry, was asked to come to Newfoundland and make a report. The expenses of his visit were borne jointly by the Roofing and Building Supply Company and the Newfoundland Industrial Development Board.

A condensation of Mr. Giller's report follows:

NEWFOUNDLAND SLATE QUARRIES AND DEPOSITS BY OWEN GILLER

Scale of Past Operations

Slate production was never undertaken extensively in Newfoundland. Trials opened in the Random Island area on the East Coast, and the Humber Arm area on the West Coast, indicate sporadic efforts by individuals or small groups of slate quarrymen. These commenced about 80

years ago, but, because of lack of capital, they failed to clear through the weathered outcrops and enter into economical production from solid slate.

With the exception of the Smith Sound quarry, all the small trials are examples of the inability of firms with insufficient financial resources to stay the course. In some cases workings were abandoned where a little further effort would have resulted in economic production.

The Smith Sound quarry is the only property where machinery was installed and where the scope of operations was extended beyond the trial stage.

The Newfoundland Slate Company operated the quarry at Smith Sound from 1900 to 1907, and the following information, derived from the Annual Statistics of Mines and Quarries, indicates the volume of production at that time, 90/95% of which was produced at Smith Sound:

Recorded Production Of Slates In Newfoundland

Year	Output in tons	Value	Not Employed
1900	600	£ 2219	Not stated
1901	2000	£ 4623	Not stated
1902	3500	£ 9041	Not stated
1903	4200	£12945	Not stated
1904	2700	£ 7767	137
1905	3858	£ 9247	130
1906	2536	£ 5223	95

It is reported that activities decreased rapidly after 1907 and that the recorded number of employees dropped to 49 before the Company finally closed down the quarry and entered into liquidation.

The following sections are quoted from the Geological Survey referred to above:

Location Of Deposits And Quarries

To quote from the Geological Survey previously mentioned:

"The chief deposits of commercial slate on the Island occur in two belts. The Eastern belt extends intermittently from Keels, Bonavista Bay, on the North to Placentia Bay on the South. The slates are of Cambrian age and are dark purple to light green in colour. The main quarries in this belt are on and near Random Island, Trinity Bay, the most notable being that of the Newfoundland Slate Company on the main land opposite Britannia Cove, Random Island, *Winter and Alison* quarries at Hickman's Harbour on Random Island, *Grieves Quarry* on the adjacent mainland and also a small quarry at Placentia Sound in Placentia Bay. Slates from the Trinity Bay area have been in use at St. John's and Harbour Grace for over 70 years and show no deterioration.

"The West Coast slate belt lies in the Humber Arm (Ordovician) formation and extends from Bonne Bay to Humber Arm. Two quarries were opened on opposite sides of *Humber Arm*, Bay of Islands, in purple, green, and blue slates, but no production is recorded."

"Notes On Quarries And Outcrops Inspected"

"From the foregoing and in view of the extent of the Cambrian and Ordovician slate deposits which have been observed and recorded in Newfoundland, this report does not attempt to cover the whole field. On the contrary, we were forced to concentrate our attention on the two districts, Random Island area, Trinity Bay, on the East Coast, and the Humber area on the West Coast, where trials had already been made and which would indicate the nature of the formation and thus save time and expense in clearing overburden and penetrating through weathered rock to solid slate.

The slate bed of the Random area is stated to be of Cambrian age and has the same physical characteristics as the Cambrian age of Caernarvonshire, North Wales, and is practically identical in texture and colour, ranging from dark purple to light green, but whilst the Random deposit contains a few stripes similar to its Welsh counterpart, it is, however, completely free from the interlaying grits found in the Welsh deposit. These grits often increase the cost of production and at times make commercial exploitation impossible. This freedom from gritty layers or beds is a factor which would heavily balance the scale in favour of the Random deposit.

The strike of this bed runs North East, South West from North of Smith Sound across Random Island, continuing South on the mainland and observed again near Come-by-Chance. This is a distance of at least 30 miles, varying in width from 300 yards to 1600 yards. No wonder Dr. Walcott of U.S.A., following his survey of the area in 1899, stated that there was enough slate in this area to supply half the world with the finest roofing material and, in his opinion, comparable with that of the North Wales and American deposits at Newark and Rutland County, Vermont.

I am not in a position to compare the American deposits with the Random beds of Newfoundland but I can without any hesitation and from long experience in the Welsh slate districts fully confirm this view, and the location, together with the special physical and structural characteristics make it easy of exploitation and development.

“(a) *Grieves Quarry*

This quarry situated at Dartmouth Cove was included in the list of properties owned by the Newfoundland Slate Company, but I doubt whether any active operations were conducted by that Company on this site.

"The disturbed condition of the bed at this point, where the original owners had started the quarry at the extreme Western boundary of the formation would not warrant any further expenditure and the quarry was abandoned before reaching any signs of stability and solid rock. In short, work did not progress beyond the trial stage.

"(b) Winter and Alison Quarries

"Numerous trials can be observed East of Hickman's Harbour, but not one has been developed beyond the trial stage. All of them would seem very promising prospects, indeed the whole formation on this side of the Sound seems to be one solid mass of pure slate and I encountered here some of the most perfect outcrops of slate which I have come across. These outcrops in places rise sheer out of the Sound for hundreds of feet and the removal of the weathered slate and its disposal into the deep waters of the bay could be accomplished at comparatively little cost, especially with modern machinery and equipment.

"The pioneering slate prospectors were entirely dependent on their hand tools, with no mechanical or power equipment at their disposal. The early abandonment of operations in face of such promising prospects is sure proof of their meagre financial resources and their inability to continue the work and reap their due reward.

"(c) Smith Sound Quarry

Situated on Smith Sound on the mainland opposite Britannia Cove from which the quarry takes the name by which it is known locally.

"This is the only quarry where any attempt was made to extend development beyond the trial stage. There still remain traces of a plan for operating the quarry on the gallery system to which the formation of the slate bed and this contour of the land would naturally lend itself.

"For some reason or other, perhaps lack of capital played some part, the top gallery of weathered and unprofitable rock was not cleared in step with the two lower galleries, until finally the original plan was abandoned altogether and the lower galleries of profitable rock pushed forward until the working face attained a height of 150 feet or more.

"This obviously made the extraction of undamaged slate blocks a difficult and hazardous operation, demanding a high degree of skill which it is doubtful would be available to the Company at that time.

"The appearance of this quarry to-day proves that brute force was the order of the day. Numerous groups of drill holes, 4" starting diameters, 15 feet to 18 feet long, were driven into the rock, often obliquely across the pillar-ing line, then fired by battery, which could only result in shattered rock, which increased the proportion of waste to finished slate, increased cost of production, and led directly to ruin and liquidation.

"This fine quarry deserved a better fate and I agree entirely with the local opinion, expressed in our presence more than once, that the Newfoundland Slate Company failed first, through lack of expert knowledge and technical skill, and secondly, through insufficient capital to develop on practical lines.

"(d) *Summerside Quarry*

This is situated on the Humber Arm, Bay of Islands, opposite Corner Brook.

"The slate deposit of the West Coast is stated to be of Ordovician age, but it differs in many respects from its counterpart in North Wales, especially in colour which in the Welsh Ordovician slate is grey. In fact the Humber slate deposit is practically identical in colour to the Cambrian slate of Random and Wales.

"The trials opened at Summerside and the outcrops along the beach show clearly the extreme folding of the formation in this district. The original bedding planes are tilted at varying angles and there has been some tendency to sliding causing fracture along these planes, thus forming a series of joints at extreme angles to the cleavage and the usual fracture joints.

"This special feature of the slate bed in this area would tend to increase the proportion of waste to finished product and the angle of dip at the limit of the fold would create conditions eventually where mining as distinct from open quarrying would have to be undertaken.

"My impression after careful study of the conditions at Summerside quarry is that the slate bed in this area cannot be placed in the same class as the Random beds. At best it could only be developed for production of slates for local use should such a market develop as a result of the expansion now taking place on the West Coast.

"(e) Birchy Cove Quarry

This quarry is a series of small trials opposite Summerside between Corner Brook and Curling, having the main road, the Newfoundland Railway, and several houses situated between the property and the river. This would hamper any large scale operations.

"My previous remarks on the characteristics of the slate bed at Summerside are applicable on this side and in my opinion this property could only be developed on a small scale and would not warrant large scale expenditure of capital.

*"Notes on the Physical and Structural Characteristics
Of the Random Area Slate Deposits*

I was greatly impressed by the uniformity in structure and character of the slate bed throughout the whole Ran-

dom area, and the following remarks are applicable in the main to the whole formation in this district.

(a) *Physical Properties*

1. *Colour*

As already mentioned, the colour of the slate ranges from dark purple to light green and compares favourably with the same predominant colours of the Cambrian formation in North Wales, a range of colours much in demand by architects in Britain, and the Random slate would be complementary to and in line with the major production of Welsh slates.

"2. *Strength*

In the absence of practical tests I am of the opinion that slate from the Random district would meet all standard specifications in this respect.

"3. *Porosity*

The Random area slate would compare favourably in this respect with the best Cambrian slates of Wales.

"4. *Electrical Resistance*

These slates are free of all impurities which affect the insulating properties of slate, and slabs from the Random deposits would be ideally suited for electrical purposes.

"5. *Durability*

Many buildings in Newfoundland have been roofed with slate produced locally and have stood the test of time. On my visit to Britannia Mr. Currie pointed out the roof of his present home which is covered with slate quarried from Smith Sound 80 years ago, and from all appearances is none the worse and will probably weather a similar period.

*(b) Structural Features**"1. Bedding*

The Random slate deposit does not always show clear lines of demarcation between the various beds of purple and green, which are sometimes separated by fault planes and sometimes merge one into another.

"One striking feature is the complete absence of inter-laying strata of gritty deposits, resulting in a clean formation of solid slate.

"2. Slaty Cleavage

After tests carried out at Smith Sound quarry I am able to testify to the ease with which this slate can be cleaved or split in thin sheets. The samples already forwarded to Mr. C. Ettrup prove that this slate is equal in this respect to the best produced at the Welsh quarries. In no single instance did I encounter any tendency to curved or irregular cleavage and the deposit is perfectly free from slips or false cleavage.

"The slate rock is entirely free from impurities such as 'crych, a Welsh term for the impurities often encountered in the Welsh Cambrian slate formation. These appear as various materials irregularly disposed and interrupting cleavage, thus making the slate in which they occur of little value. Sometimes the 'crych' is a film of microcrystalline pyrites, in other cases disrupted materials from coarser sedimentary beds into ground slate matrix.

"This excellent cleavage and freedom from impurities of the Random slate would suggest low production costs and would also reduce the period required to train green labour into expert splitters of slate.

"3. Grain

The deposit consists almost entirely of fine grain slate with little or no interstratified coarse material.

"4. *Joints*

The vertical joints usually encountered in the Welsh Cambrian formation are similarly spaced in the Random slate bed. They are dispersed at varying distances which ease the problem of quarrying large blocks of slate.

"The horizontal joints are not so clearly and regularly defined, tending to dip at an angle of 40 degrees to 60 degrees and often fading out abruptly. This characteristic demands care and skill in mining the rock, a feature not always taken into consideration by past operators of the Smith Sound quarry. Without due regard for siting the drill holes in relation to both the vertical, and especially in this case, the horizontal joints, the blasting would result in the shattering of the rock, thus increasing the proportion of waste and adding to the subsequent work of trimming the larger blocks into manageable sizes for sawing and processing in the mill.

"5. *Ribbons*

In general the deposit is singularly free from ribbons and the few appearing in some sections are well spaced and would enable sizable slates to be produced when the ribbons are sawn off at the mill.

"6. *Pillaring and Cross Cuts*

These features are naturally developed and would greatly add to the ease of trimming operations by both rockmen and splitters.

(c) *Chemical Analysis*

Messrs. Stanger and Blount of the Chemical and Testing Laboratory, Westminster, London, S.W., examined and tested samples of Newfoundland slate and the following statement was published by the Newfoundland Slate Company:

Analysis Of Newfoundland Slate

Silica	64.34
Alumina	19.10
Oxide of Iron.....	6.38
Lime	1.36
Magnesia	3.31
Carbon Dioxide	Trace
Potassium Sodium	None
Moisture and Organic Matter.....	3.30
	<hr/>
	97.79
	<hr/>

*"QUARRYING OPERATIONS AND FACILITIES**1. Overburden*

At Smith Sound quarry and other trials in the Random area the amount of overburden on the slate bed is negligible and no great expenditure would be involved in stripping operations.

"Development in general would be confined to stripping a depth of weathered outcrop rock varying from 30' to 50'. This depth of weathering is equal to that encountered in the Welsh quarries whenever the slate beds are not covered by grit beds or a deep layer of drift.

"2. Disposal of Waste

The waste from all the quarries in the Random area could be easily and cheaply disposed of into the Smith and Random Sounds, a great saving in cost compared with most slate quarries which are situated inland and have to dispose of the waste over large tracts of land, adding appreciably to cost of production.

"3. Drainage

Surface drainage only would be required owing to the natural slope of the ground which lends itself to quarrying

on gallery formation. Pumping would not have to be resorted to for years to come.

"4. Space For Erection of Building and Storage Yards

Level ground of ample dimension exists along Smith Sound, near the quarry, for erection of buildings required for the power plant and processing sheds, leaving further ground for storage yards.

"5. Loading And Shipment Facilities

Short piers could be erected at little cost alongside the storage yards and ships up to 8000 tons could be moored alongside. Thus direct shipment by sea, which is still the cheapest form of transport, could be organised and so cut handling costs down to the minimum.

Conclusions and Capital Required For Exploitation of Deposits

1. Conclusions

The Newfoundland slate deposits of the *Random Area* can be listed as one of the finest slate deposits of the world, as yet untouched. In these can be found all the best features which enable such deposits to be exploited on a large scale and at low cost, with very few physical or structural conditions that add to the cost of quarrying and processing operations.

"The following points are worth consideration:—

(a) The slate formation wherever inspected is surprisingly true to type, with very few disturbances or impurities.

(b) Physical and structural features, with few exceptions, would make any quarry opened on this formation a low cost producer if equipped with modern machinery and advantage taken of the natural contours of the ground.

(c) From all indications the proportion of finished slates to waste would be high compared with conditions in some of the Welsh quarries.

(d) The position of the slate beds cutting across the Sounds with their deep water coming near shore would be an important factor towards reducing cost of waste removal.

(e) Shipment of slates direct from piers erected at the quarries could be made from April to November.

(f) Pumping costs, always a heavy item in the old Welsh quarries and mines, would not be required.

(g) A slate quarry opened in virgin formation, once the development stage had been passed, could expect to operate at increasing returns through extension of operations. Whilst the Welsh quarries without exception have long since been faced with decreasing returns due to depth and extent of the workings and the exhaustion of the most profitable rock.

"2. Capital Required For Exploitation of Deposits

Notwithstanding the fact that the slate deposits of the Random area are ripe for development at numerous points and for each some special advantage could be claimed, the scarcity of trained labour, at least for some time, makes it necessary to concentrate on one unit as a training centre. "Owing to past scale of operations at Smith Sound and the amount of solid rock already exposed, this might be considered as the most appropriate quarry to re-open where production could be expected within reasonable time.

The present condition of the quarry would require some expenditure on re-forming galleries and clearing of old workings and during this time buildings could be erected and plant installed. This could be accomplished in

part during the first year and completed by the end of the second season when the quarry would be in production.

"My estimate of capital resources required is based on employing a labour force of 100 men as a first stage of development. Production of 200 tons or more per month could be expected, say in the third year, or at the rate of 150/200,000 dollars a year at present average market prices at quarries in Wales of about \$60.00 a ton.

Erection of Mill, Power House, Store, Offices, Hostel, etc.	\$ 45,000.00
Equipment, i.e. Diesel Electric Shovel, Trucks, Compressor, Drilling Machines, Stationary Power Unit, Saw Tables, etc.....	55,000.00
Development and clearing it away.....	60,000.00
Working capital to provide for stock and emergency reserve	40,000.00
	<hr/>
	\$200,000.00
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"The total of \$200,000.00 does not provide for purchase price of land.

"The equipment on the above scale would cater in course of time for a higher target of production than the estimate given, when the quarry should have reached its profitable stage without any increase on machinery or capital expenditure other than development which in the initial stages would be heavy.

"I am not attempting to estimate costs of production in detail. From past experience we know that the only constant factor in all calculations of cost is the skilled labour available and its standard of production under given conditions. In the absence of such skilled labour in Newfoundland I am refraining from assessing in detail costs of production, but given comparable basis of costs I would estimate that slates could be produced from the

Random slate deposits of Newfoundland 25% cheaper than anywhere else I am aware of."

Following the presentation of this report, plans were made by the Roofing and Building Supply Co. to proceed at once with the formation of a company to purchase the existing quarry site at Smith's Sound, and to undertake slate production for sale in the United Kingdom.

Unfortunately, just about this time the dollar exchange difficulties of the United Kingdom emerged and sterling convertibility was suspended. This, of course, meant that no sales of slate could be made to the United Kingdom and, despite many efforts and approaches made at top level to the United Kingdom Government, it was not possible to make any arrangement whereby sales of slate might be made. The proposition, therefore, had to be dropped and remains in abeyance. At a later date, should world trading be resumed on a normal basis, it would be well worthwhile to re-examine this possible slate development.

There is also a possibility which is at present under consideration, to use the slate deposits of Newfoundland for the manufacture of slate granules. This commodity is used principally in the production of roofing materials, and might be marketed in Canada.

LIMESTONE

In the field of mineral development, the Newfoundland Industrial Development Board did not carry out direct exploration, prospecting, or geological mapping. In the first place the Board's funds were insufficient to permit work of this nature and, secondly, the Geological Division of the Newfoundland Government was already well established and was engaged in as many phases of this work as possible.

The contribution of the Industrial Development

Board was, therefore, primarily to aid in the dissemination of data already available to interested parties; to endeavour to interest responsible groups or firms in mineral possibilities in Newfoundland and aid them by any means within its power; and, thirdly, to co-operate with the Geological Survey Division of the Government in all matters within the scope of the Board.

Some examples of the activities of the Board in this direction are outlined in detail in the following paragraphs.

In general, exploration and geological survey work in Newfoundland have been on a moderate scale only, and much remains to be learned about the mineral resources of the island. Unfortunately, surface indications of mineral deposits do not always exist, and prospecting by traditional methods is not as effective as in some other regions. Newfoundland is a region in which prospecting requires to be done by a mining company with adequate resources and skills using up to date exploratory methods.

Of the many deposits and prospects throughout the island the areas of base metals showings would appear to be the most promising; the development of certain other metallic and non-metallic prospects depends largely on world consumption and demand over the coming years. In many countries the existing deposits of certain minerals are showing signs of depletion. As the process of depletion continues, producers will be forced to look further afield for supplies, and more attention will be focused on the mineral resources of regions such as Newfoundland.

Limestone and Marble

Newfoundland has been endowed with some fairly good deposits of limestone, a mineral which, though prevalent in most countries, is always in demand and is widely used both in industry and agriculture.

The limestone deposits of Newfoundland are already being used to an appreciable extent, as the quarries at

Aguathuna have been supplying the steel mills at Sydney, N.S., with an average of 300,000 tons per year for quite some time. Other quarries supply the needs of the two pulp and paper companies, and also produce limestone used for agricultural purposes. There is also a firm in St. John's operating a kiln and producing quicklime. It is estimated that approximately 27,000 to 30,000 tons of limestone are quarried annually in addition to the operations at Aguathuna. Limestone quarries in operation at present are located at the following places:

- (1) Aguathuna,
- (2) Cobb's Arm, N.D.B.,
- (3) Corner Brook (Dormston Quarry),
- (4) Quarry operated by Department of Natural Resources near Deer Lake.

Some of the more important inactive limestone and marble quarries and prospects are located at the following places:

- (1) Piccadilly, Port au Port Peninsula,
- (2) Humbermouth,
- (3) Heart's Delight,
- (4) Canada Bay,
- (5) Sop's Arm.

While the quarrying of limestone was already adding considerably to the economy of Newfoundland, the Industrial Development Board felt that there were good possibilities of expansion in this field and put in a good deal of effort towards this end. There follows an account of the activities and findings of the Board in this connection:

Use of Limestone in Agriculture

The use of pulverized limestone in agriculture is very

important, particularly on acid soils like those in Newfoundland. The agricultural division of the Department of Natural Resources has made substantial efforts to induce local farmers to use more limestone and has, among other things, operated limestone quarries and crushers and facilitated the transportation of stone to agricultural areas. The output of this government-operated plant is some 3000 tons per year, which is far below the needs of Newfoundland soils. The majority of farmers have yet to appreciate the value of limestone and the necessity for using appropriate quantities. Moreover, the limestone supplied by the Department of Natural Resources and the subsidies on transportation are costly, and output is considerably limited.

In 1944, the Industrial Development Board was approached by the Government of the Province of Prince Edward Island regarding the possibility of Newfoundland's supplying a portion of all of Prince Edward Island's limestone requirements, which were from 15,000/20,000 tons per year and upwards. The specifications of this limestone were as follows: it was to have a Calcium Carbonate content of not less than 85%; it was to be shipped in bags and was to meet the following physical analysis—

100% to pass through 10 mesh screen,

50% to pass through 40 mesh screen,

30% to pass through 100 mesh screen;

and if it could not be supplied in the above form, the possibility of shipping it in lump size and having it crushed in Prince Edward Island was to be investigated.

The Board's studies showed that the quarry sites best suited to supply this market are (1) Piccadilly, Port au Port Peninsula, and (2) Humbermouth. Cost estimates were drawn up, and, at the time, (1945), it was estimated that pulverised limestone in bags could not be sold for less than \$6.50 to \$7.00 per ton F.O.B. shipping point.

Limestone in lump sizes, it was estimated, could be loaded on board ship for around \$2.00 to \$2.50 per ton.

These figures were substantially greater than Prince Edward Island had been paying for its existing supplies of limestone (from New Brunswick, Quebec and Nova Scotia). This, in part, was due to subsidies totalling \$1.25 per ton which were being paid by the Federal and Provincial governments and which would not be applicable to limestone shipped from Newfoundland. Now that Newfoundland is a province of Canada the situation with regard to these subsidies may be changed, but at the time these negotiations were in progress it was not possible to see how limestone from Newfoundland could compete in the Prince Edward Island market with subsidized stone from other provinces.

Use Of Limestone in Chemical Industry

Calcium carbide is to-day one of the basic new materials of the chemical process industries. From calcium carbide acetylene is generated, and acetylene in turn is used in many synthetic chemical processes as well as in the form of gas for welding and cutting metals.

Calcium carbide is manufactured in an electric furnace, from limestone of high purity and coke. For each ton of calcium carbide produced there are required approximately 2000 pounds of lime, 1300 pounds of coke and 3000 k.w.h. of electrical energy.

It has been stated that the ideal calcium carbide manufacturing location is one in which suitable limestone, coal, power and markets are all found within the same region. The largest single economic influence upon plant location is that of power, as it represents the biggest item of production cost. Location with respect to markets is probably the second most important factor.

These points are brought here because the question of

manufacturing calcium carbide in Newfoundland from limestone deposits has been raised from time to time.

High grade limestone is essential to the manufacture of calcium carbide. Among other things, the calcium carbonate content should be around 97% greater, and the phosphorous and sulphur contents less than 0.5%.

On the basis of existing information, it is believed that certain limestone deposits on the Port au Port Peninsula and at Canada Harbour would measure up to the specifications of the calcium carbide industry, although a programme of drilling and sampling would have to be undertaken to prove definitely both the quality and the quantity of the high grade limestone in these areas.

The Industrial Development Board made fairly extensive efforts to try and interest United States and Canadian producers of calcium carbide in the limestone deposits of Newfoundland. These efforts did not materialize at the time chiefly because of (1) the long distances involved and the consequent difficulty of transporting Newfoundland limestone to the carbide manufacturers, and (2) the adequacy of the other supplies of limestone already available to most of these manufacturers.

In connection with (2) above, while the reserves of limestone remaining in those quarries now supplying the carbide industry on the mainland and the U.S.A. may be adequate to ensure future operations for some time to come, any substantial increase in the demand for limestone or acetylene may well result in the utilization of the limestone deposits of Newfoundland.

GYPSUM

On the West Coast of Newfoundland, in the St. George's Bay region, there are extensive deposits of gypsum which, up to the present time, have not been worked commercially.

Gypsum is a hydrous calcium sulphate which, when partly dehydrated or calcined, is commonly known as plaster-of-Paris. Associated with gypsum is anhydrous calcium sulphate known as anhydrite.

Calcined gypsum has a wide variety of uses, the chief of which are in wall plaster, wallboard, pottery and industrial plasters, dental and orthopaedic plaster.

Raw gypsum (uncalcined) is a source of sulphur trioxide when used as a fertilizer. Another major use of gypsum is as a retarder in the manufacture of portland cement.

The presence of anhydrite is usually considered a disadvantage when quarrying gypsum. However, anhydrite by itself can be used in the manufacture of sulphuric acid, ammonium sulphate, and cement.

As full details of the geology and location of the west coast gypsum deposits are contained in Information Circular No. 3 published by the Department of Natural Resources of the Newfoundland Government in 1937, it is not thought necessary to deal with this aspect of the mineral occurrence. It is sufficient to state that the tonnage of gypsum available at any one of a number of deposits is sufficient to justify quarry operations on a commercial scale. Many of the deposits are also located at or near tidewater, a fact which would be of great advantage in any development programme.

The N.I.D.B. has disseminated information concerning the gypsum resources of Newfoundland to selected organizations both in Europe and in North America in an effort to stimulate interest and possible development of these deposits. The Board has also been in close touch with a British firm, who have developed a new method of building construction using gypsum to form a building panel which is both the building and the load-bearing unit.

The plant required to produce these panels consists of a calcining plant to treat raw gypsum, and a series of inexpensive moulds in which the panels are formed. Experimental work in connection with this method of building was recently carried out in Montreal and the reports so far received are quite favourable.

Crude gypsum is a low-priced and fairly plentiful mineral which is found in many parts of the world. For this reason alone it is rather difficult to interest existing large producers or consumers in opening up new deposits. The lifting of existing exchange and import restrictions in the United Kingdom and other European markets might make it possible for Newfoundland gypsum to find markets in these countries at a later date.

PETROLEUM

According to Information Circular No. 4, entitled *Mines and Mineral Resources of Newfoundland*, published by the Geological Survey of Newfoundland in 1938, petroleum is said to have been discovered on the West Coast of the island as early as 1812. This publication also mentions briefly the work undertaken to date on three petroleum prospects, one at Shoal Point, Port au Port Bay, and the others at St. Paul's Bay and Parsons' Pond, all on the West Coast. A certain amount of seepage occurs at these locations and this occurrence was apparently the reason for their discovery. Drilling and other exploration work appear to have been carried out more extensively at Parsons' Pond than at any other locality. In 1904, a total of some 700 barrels of oil was recovered from wells in this area. Generally speaking, however, the overall results of the drilling programme carried out over a period of several years were none too encouraging.

Oil possibilities also exist in the Cape Rouge District on the North East Coast, and in oil bearing shales, the most

promising of which are to be found in the Deer Lake and Grand Lake regions.

While none of the oil prospects in Newfoundland has been extensively explored, there has been accumulated, as a result of a number of surveys and geological reports, a good deal of fundamental information concerning the structure and oil accumulation possibilities of the various areas. None of this information has disclosed promising prospects of commercial recovery.

Petroleum Refinery

The question of the establishment of a small refinery to produce gasoline, fuel oils, residual fuel oils, etc., for the Newfoundland market is one that cannot be dealt with in any detail in a report of this nature. It is, however, possible to present, in brief form, some of the findings of the N.I.D.B. in this respect and to point out some of the more important factors involved.

To start with, it may be stated that it is possible to put forth a good theoretical case for the establishment in Newfoundland of a small topping refinery producing from imported crude oils—low octane gasoline, kerosene, distillate fuel oils and residual fuel oils.

It has been ascertained that a small topping refinery capable of processing 500 barrels per day of crude oil would involve a capital expenditure of \$350,000 to \$400,000. A major portion of this sum would be required to construct tankage in which to store both crude and refined products. The output of such a refinery would be approximately as shown in the following table. The last column shows the percentage of the present Newfoundland annual imports of certain petroleum products that a 500 barrel/day refinery would produce. The market for these classes of petroleum products in Newfoundland would approximate the annual imports since there is at present no domestic production.

Product	Yield	Production Bbls./day	Percentage of present Nfld. imports
Low Octane Gasolene	13%	65	25%
Kerosene Stove Oil	10%	50	26%
Distillate Fuel Oil	40%	200	16%
Residual Fuel Oil	37%	185	33%

The crude oil for such an operation could come from either the Texas Gulf coast, Venezuela or the Middle East in small tankers. The refinery in Newfoundland would, of course, have to be located at tidewater. As was pointed out earlier, the technical aspect of such an operation presents few difficulties and it is theoretically possible to show an operating profit with a unit of this type. The marketing problem is, however, complicated by certain factors which would have to be given very careful consideration. There is, first of all, the question of selling in competition with existing oil companies and finding outlets for all the various products. The low octane gasoline produced would not be suitable for automobile use but would be intended solely for motor boats. In this connection, the purchase of motor fuel by fishing boats is seasonal, being at a low point in winter months. As the refinery would have to operate all year round there would be the problem of storage of the production of gasoline during the winter months. The purchase of all the other products is, to a degree, seasonal also, but not to such a great extent as gasoline.

In certain parts of Canada and in other countries, small refineries of the size and type described have operated successfully in competition with the major oil companies. Their markets, must, however, be restricted to a small area or within a small group such as a co-operative. It should be emphasized that the work of the Board on this matter has not been detailed, and extensive investigation

of all the problems involved should precede any further action by interested parties.

LABRADORITE

Labradorite is a kind of feldspar which shows a variety of colour when turned in the light. It is native to Northern Labrador and may be obtained in large quantities. It may be noted here that it should not be mined by blasting as this method has a shattering effect on the stone.

It is not too difficult a stone to cut and polish, and when used in costume jewellery, rings, necklets, combs, etc. makes a very attractive and much sought after article of adornment, especially by tourists visiting Newfoundland.

For many years, small quantities of the stone were gathered by fishermen for St. John's dealers, and shipped to other countries, notably Germany, to be cut, polished, and set in jewellery for the Newfoundland trade. During the last Great War, when it was impossible to have this done, the Board endeavoured to find someone locally who would experiment on the stone. Succeeding in this, it was not long before the Board found that the art of cutting and polishing could be developed here, and the National Handicraft Division was encouraged to adopt it as one of their courses of instruction. The results, after a year or two, were eminently satisfactory and proved beyond all doubt that the manufacture of Labradorite jewellery offered a worthwhile opportunity as a specialized and a truly Newfoundland industry.

There is another important market that might be developed. Large-scale manufacturers of clothing accessories, such as belts, braces, etc., use large quantities of cut stones in their business and, from enquiries made by the Board, it was learned that they would be very interested in finding a definite supply of Labradorite cut to their required measurements.

BRICK MANUFACTURE

Brick has been manufactured in the Trinity Bay area of Newfoundland for a good many years. At one time there were three or more plants in operation but at the present time there are only two.

Both these plants produce a common brick only, using as a raw material the alluvial clay deposits of the area. Their combined annual output would be from 500,000 to 750,000 bricks per year.

Lack of up to date equipment and production methods, together with the fact that both plants are rather remote from the main marketing centres in Newfoundland, has tended to restrict any expansion.

In 1943 a plant was established at Mackinson's, Conception Bay, for the manufacture of a cement brick, concrete block, tile, pipe, and other allied products. This plant has a capacity of approximately 12,000 bricks per day and seems to have established a ready market for its products in St. John's and other nearby centres.

In addition to the local manufacturers referred to above there are plants established at St. John's, Corner Brook, and Botwood, manufacturing concrete blocks.

The average annual quantity of brick imported into Newfoundland during the past three years runs slightly over one million. These bricks were supplied chiefly from manufacturers in Nova Scotia. The type of brick imported is principally common, face and fire brick, and the quantity varies considerably each year, depending upon the volume of major building construction in Newfoundland.

The Geological Survey Division of the Newfoundland Government have, from time to time, in the course of their survey work, had samples of clay and shale from various parts of the province tested to determine their suitability for brick manufacture. Shale samples from Random Is-

land in Trinity Bay have given favourable results in laboratory tests, but unfortunately, so far, no suitable raw materials have been discovered near any of the major population centres of the province.

Brick is a commodity that is costly to transport, and for this reason manufacturing plants are always located as near as possible to consuming centres.

Brick consumption in Newfoundland has always been low in comparison with the other provinces. The main reason for this is the high cost of brick construction in comparison with other methods of building. It is felt that this condition can be attributed mainly to the high cost in Newfoundland of both domestic and imported brick.

The table below shows the f.o.b. price of common brick as manufactured in the Trinity Bay area of Newfoundland, and at Halifax, N.S. To these f.o.b. prices are added freight charges, which, it will be noted, account for a considerable proportion of the landed cost. To the landed costs shown, there will have to be added handling and delivery charges of approximately \$5.00 per thousand bricks.

Approximate cost per thousand, common bricks,

f.o.b. Halifax, N.S.....	\$32.50
Freight, Halifax to St. John's.....	32.50
	<hr/>
Landed cost.....	\$65.00
	<hr/>

Approximate cost per thousand, common brick,

f.o.b. plant, Trinity Bay, Nfld.....	\$37.00
Freight, plant to St. John's.....	8.00
	<hr/>
Landed cost.....	\$45.00
	<hr/>

Face brick, which is not manufactured in Newfound-

land (except for a type of cement brick) costs from \$75.00 to \$80.00 per thousand in St. John's.

It is the opinion of the Board that further expansion in the brick manufacturing industry is feasible and would be particularly attractive if suitable raw materials were found near St. John's or possibly Corner Brook. A small modern plant, capable of turning out good quality shale clay brick, tile, and other similar products at prices comparable with those of plants in the other provinces, should be able to build up a sufficient market for its product to enable it to operate profitably.

The capital cost of a brick manufacturing plant is small compared to other undertakings of the same proportion. The most important factors apart from plant location are (1) fuel costs (2) labour costs (3) costs of raw material.

The investigations of the Board have led it to believe that fuel costs might be kept to a minimum by the use of a modern down-draft oil fired kiln.

THE MANUFACTURE OF ROCK WOOL AND INSULATING MATERIAL

According to Goudge (1) Rock wool, one of the most effectual and satisfactory insulating materials on the market, is a furnace product made from a self-fluxing siliceous and argillaceous dolomite in which the acidic and basic constituents are present in such proportions that their fluxing action is nearly balanced.

The manufacturing process may be carried out in any one of three types of furnaces: cupolas, reverbatory or hearth furnaces and electric furnaces. The cupola generally uses coke as a fuel—the reverbatory furnace, oil or gas. The use of the electric furnace depends, of course, primarily upon the cost of electrical energy as compared with other fuels in the particular locality in which it is desired to establish the plant.

In the process of manufacture the molten rock comes from the base of the furnace in a thin stream and falls in front of a blast of high pressure steam or air which has the effect of blowing the molten rock into small droplets that are individually converted to fibre on their rapid passage through the air. Another method of fiberizing is to allow the molten stream of rock to fall on a rapidly rotating disc.

The next stages of the process occurs when the fibres reach the floor of the wool room, the bottom of which is usually a wide conveyor belt. The fibers are transported from the wool room by this conveyor belt and are next usually treated with a spray of high flash point oil to render the wool dustless.

The wool thus formed may be cut by knives and placed between sheets of specially treated paper to form blankets or batts, or it may be passed through a machine known as a granulator to form granulated wool.

As prepared for market, mineral wool is so light and bulky that the cost of delivery per unit weight is very high. The natural result is that rock wool plants are inclined to be located near major marketing centres and are relatively small.

The output of the average size furnace runs around 900 pounds per hour, according to Goudge (1).

The Newfoundland Government Customs Returns show that the present annual consumption of both rock and glass wool in Newfoundland runs around 100,000 pounds or less. This amount, of course, is entirely inadequate to justify the erection of a manufacturing plant at the present time. However, there has been a very rapid increase in the consumption of insulating materials in North America in recent years. Freight to Newfoundland on such a bulky material is a very considerable part of the cost. The establishment of a local rock wool plant would undoubtedly result in a much lower selling price for the

product. The need for wider use of insulation in construction is of great importance because of strong winds and the particularly high fuel costs here.

It is believed that no undue difficulty should be experienced in finding suitable raw materials in the island. In fact, Bogart (2) suggests that the cement rock of Trinity Bay, if mixed with siliceous shales found in the vicinity, might yield an excellent rock wool.

(1) Goudge M.F. Raw materials for the manufacture of rock wool in the Niagara Peninsula of Ontario, Mem. Series No. 50, Mines Branch Ottawa 1931.

(2) Bogart J.C. Limestone Deposits of Trinity Bay. Bulletin No. 13. Geological Survey of Newfoundland 1942.

PORTLAND CEMENT

In 1942 the N.I.D.B. carried out certain preliminary investigations with respect to the possibility of manufacturing Portland Cement in Newfoundland. At that time, cement was in widespread demand, both in Newfoundland and abroad, chiefly for defence purposes. Samples of limestone and silica clay from the Port au Port Peninsula, and later, pyrophyllite from Manuels, Conception Bay, were sent to the laboratories of the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, for grinding and burning tests. A summary of the findings of this Company resulting from laboratory tests made by them follows:

"The raw materials were proportioned as follows: Limestone 76.9%; Pyrophyllite 11.5%; Clay 11.5%; and ground in a laboratory jar mill. From the chemical analysis of these materials submitted we expected to have burned cement clinker having the following approximate analysis: CaO 63.4; MgO 1.87; Al 203 7-87; Fe₂O₃ 4.4; SiO₂ 22.4. This analysis corresponds quite closely to the average analysis of normal portland cement.

When the materials were burned in the furnace, ground, and made into test briquettes, their early strength was very low, but the 7 and 28 day tensile strengths were 132 psi and 366 psi respectively. Since the low initial strength was an undesirable property which is usually associated with cement low in lime, we had a chemical analysis made of the cement. The following are the results: CaO 58.25%; SiO₂ 24.48; MgO 2.20; Al₂O₃ 7.76; Fe₂O₃ 2.98.

From these chemical analyses it can be seen that the lime-silica ratio is too low to form an appreciable amount of tricalcium silicate which is considered to be the compound which gives cement its early strength. The amount of dicalcium silicate formed, the compound to which the 7 and 28 day strength is attributed, appears to be normal. The clinker produced was very easy to grind. You will notice that the cement was ground to a fineness of 97% passing a 325 mesh screen, specific surface of 2410 sq. cm. per gram, when put through our standard grinding test for cement clinker. On ordinary clinker this test grind will produce a product having a specific surface of approximately 1500 to 1800 sq.cm. per gram. The extreme fineness of the cement produced no doubt caused the small amount of tricalcium to set before the test briquettes could be formed, thus contributing to the low initial strength of the test pieces.

Basing our conclusions on the test results obtained we believe the materials used behaved in a normal manner, and there is no doubt in our mind that good portland cement could be made from the materials submitted. There would, no doubt, have to be some adjustments in composition made when the process would be put on a commercial basis. This, however, is always true of previously untried materials and is considerably beyond the scope of laboratory."

It should be understood that these tests were carried

out with raw materials that were readily available at the time and that it was not the intention of the Board to consider or recommend a cement plant with two of the three essential raw materials located on the west coast and the other on the Avalon Peninsula. All that was required was some preliminary information on the suitability of the major raw materials.

This preliminary laboratory report showed that in general the raw materials available in Newfoundland were suitable for cement manufacture. More extensive tests and adjustments would, of course, have to be made before proceeding further but it should be possible to find all the necessary raw materials with the exception of fuel on the west coast of the Island, in the Bay of Islands—Bay St. George region.

There are several other important technical and economic considerations that must be taken into account when studying the possibilities of a cement industry in Newfoundland. There are (1) marketing and transportation problems (2) fuel costs.

Dealing with the first item we find from the Customs Returns that the average annual consumption of portland cement in Newfoundland is running around 100,000 bbls. per year (1 barrel equals 376 pounds) with present supplies being imported from the United Kingdom, United States, and Central Canada. The generally accepted minimum economic plant size for cement manufacture is one thousand barrels per day. It follows, therefore, that a cement plant of this size located in Newfoundland would have to find outside markets for approximately two-thirds of its output, or operate part time. This latter course is not feasible as it would raise operating costs to a prohibitive level.

Possibly the first region to consider as an outside market for the surplus output of a Newfoundland plant is

the neighbouring Maritime Provinces of Canada. Nova Scotia, New Brunswick and Prince Edward Island together have an annual consumption of around 600,000 barrels of cement. These regions are at present served by rail transportation from plants located in the Montreal area and by bagging plants erected at Chatham, N.B. and Halifax, N.S. Cement is brought to these bagging plants by special steamer. The Maritimes are also at present consuming a certain proportion of cement imported from European countries.

This latter point is worthy of special note as it shows that the demand for cement in the Maritimes and Eastern Canada is to-day greater than the domestic industry can supply. Informed opinions vary as to whether or not this condition is a temporary one brought on by the present high level of building construction and the consequent tremendous demand for building materials of all kinds. It is clear, however, that a careful analysis of this situation should precede plans for a cement manufacturing plant in Newfoundland, as such an industry must be based not on the immediate needs of the region but on the long-term requirements. Costs must also be such that over a long term period a Newfoundland plant would be able to maintain a competitive position.

A Newfoundland plant selling cement in Eastern Canada at the present time would therefore not only be in competition with established Canadian producers but also with European manufacturers who, by reason of devalued currencies, low ocean freight rates, and comparatively low costs of production are apparently able to sell in Canada at competitive prices.

The Newfoundland market for cement also deserves some serious study, as by reason of proximity to raw materials the only location for such a plant would appear to be on the west coast. On the other hand, the greater proportion of the cement consumed in Newfoundland

would seem to be on the east coast or Avalon Peninsula. This would necessitate a rail or water haul from one end of the island to the other. Transportation charges could thus destroy many of the advantages of a local plant. It may be that special freight rates could be obtained to alleviate this condition but it is clearly a point for consideration.

While dealing with transportation, it would seem that a cement plant located on the west coast of Newfoundland and shipping the bulk of its output to Eastern Canada would have to rely mainly on water transportation. Ships coming to the west coast of Newfoundland with cargo and which would otherwise return light or empty might be utilized to advantage.

One of the most important factors with respect to the manufacture of cement is the cost of the fuel used for burning the clinker. Meade (3) shows that fuel costs represent 28% to 32% of the direct manufacturing costs. It takes from 80/100 lbs. of good bituminous coal to burn one barrel of cement clinker (376 lbs.).

For this reason, a cement plant must have available to it adequate supplies of relatively low cost fuel, either coal, fuel oil or natural gas.

A plant in Newfoundland could use either coal or Bunker C fuel oil, depending upon the relative cost of either of these fuels landed at the manufacturing site. In this connection, Meade (3) has developed an interesting chart showing the relative cost of the various fuels used in cement burning. In this chart, efficiency and cost of preparation have been taken into account in each case.

The following figures are taken from the chart referred to above with the exception of the column showing the price of oil per Imperial gallon, which was added:

Cost of Pulverized Coal per ton (2000 lbs.)

\$ 6.00
8.00
10.50
12.00

Equivalent cost of Fuel Oil per gallon

U. S. Gall.	Imperial Gall.
3.3 cents	4.0 cents
4.3 cents	5.2 cents
5.5 cents	6.6 cents
6.2 cents	7.4 cents

To illustrate further, using the above table it will be seen that coal at \$8.00 per ton is equivalent to fuel oil at 5.2 cents per Imperial gallon; or coal at \$12.00 per ton is equivalent to oil at 7.4 cents per Imperial gallon.

As far as is known, competitor plants on the mainland operate on pulverized coal which costs from \$10.25 to \$10.50 per ton (2000 lbs.). As against this a local cement plant would have to operate on Bunker C fuel oil, which would cost approximately 7.9c. per Imperial gallon delivered by tanker.

Another point with any industry is the amount of employment it will create. For a cement manufacturing plant Meade (3) states that a 2500-3000 barrel per day plant will require one employee for every 15 to 25 barrels of cement produced per day (138 employees, average). This figure does not include those employed in quarry work.

To summarize then, the essential points with regard to the feasibility of a cement industry in Newfoundland are

1. The Newfoundland market itself is insufficient to support a plant of minimum size.
2. A Newfoundland cement plant must, therefore, find outside markets for the greater portion of its output.

3. A local plant should be reasonably certain of being able to compete as regards cost and quality in whatever markets it chooses to supply.
4. It must be reasonably certain of being competitive in these markets over a long term period and not only in periods of scarcity and high demand.
5. One of the most important factors with regard to overall costs of production are fuel costs, and an assured supply of relatively cheap fuel is a necessity.
6. An adequate survey of a cement manufacturing proposal requires, of course, a close study of costs in relation to the physical advantages or disadvantages of the chosen site and the economic availability of suitable materials.

(3) Meade, Richard K., "Portland Cement, Its Composition, Raw Materials, Manufacture, Testing and Analysis." The Chemical Publishing Co., New York, N.Y. *Limestone Deposits at Heart's Delight, Trinity Bay*

Though not investigated by the Newfoundland Industrial Development Board, there is, in Bulletin No. 13, "The Limestone Deposits of Trinity Bay" by J. C. Bogart, published by the Geological Survey of Newfoundland, an interesting account of the possibilities of manufacturing a natural cement from the deposits of agrillaceous cement rock near Heart's Delight. Bogart states that, with the addition of a minimum of 15% limestone, these deposits of cement rock could be used to produce a portland cement.

He estimates that approximately 500,000 tons of cement rock are available by open pit mining methods, which, together with added limestone, could produce 1,000,000 barrels of cement. This, he states, is not sufficient to keep a small modern plant in operation for more than ten years, which is too short a time in which to amortize the investment.

MANUFACTURE OF FERTILIZER

From its earliest days the N.I.D.B. has been collecting data on, and studying closely, all aspects of the fertilizer industry, with a view to the possibility of establishing a local plant.

At first it was thought that the offal and other by-products from the fishing industry might provide the basis of a fertilizer industry in Newfoundland. Both fish scrap and fish meal have been used for many years as a fertilizer ingredient. At present, however, they are being used to a much lesser extent than formerly, as fish meal is now being used in increasing quantities in feeds. The opinion of those well acquainted with the industry is that fish offal, when available in any quantity, may be much more profitably processed into fish meal for animal feed purposes than used as an ingredient in fertilizer.

The manufacture of fertilizer, as usually practised in North America to-day, may be divided into two stages consisting of (1) The production and curing of superphosphate, and (2) The mixing of other ingredients with the superphosphate and the subsequent bagging of the product for distribution.

The first of these two steps is carried out only in cases where fairly large scale operations are contemplated. In the smaller plants, which are generally known as dry mixing plants, the prepared raw materials are shipped in and are mixed together in the required proportions and bagged.

It is this latter type of operation only that might be suitable for Newfoundland as the island's annual consumption of fertilizer is relatively small, being approximately 4000 tons.

In 1946, the Board, in conjunction with a major United States fertilizer company, explored the possibilities of establishing a small dry mixing plant in Newfoundland. Officials of this company visited Newfoundland for the purpose of observing the local picture at first hand.

Upon the conclusion of this visit they recommended the establishment at St. John's of a small modern dry mixing plant with an initial capacity of 4000 tons but capable of economical expansion to an output of 7,500 tons per year.

The raw materials, consisting of Ammonium Nitrate, Ammoniated Superphosphate, Sulphate of Ammonia Superphosphate, Muriate of Potash and small quantities of Magnesium Oxide, would all be brought to the plant by ship in bulk cargo. In addition small quantities of local sand or limestone would be used as a conditioner.

It was estimated that the initial expenditure necessary to construct the plant, purchase machinery and provide for working capital would be \$200,000.00.

It was estimated that the costs of production of the local plant would enable it to sell its products at an average price of \$1.00 per ton less than the selling price of imported fertilizers. An increase in the output of the plant to 7000 tons per year would, it was estimated, enable the selling price to be reduced by \$5.00 per ton.

It was the opinion of the officials who conducted the survey that farmers in Newfoundland were not using as much fertilizer as they should to obtain a proper yield. It was also their belief that an active sales and educational programme put on by a local fertilizer company would not only result in increased sales but would greatly improve the lot of the farmer.

Efforts made to interest capital to create a local fertilizer manufacturing plant did not materialize but the possibility of such an enterprise should not be ruled out.

One important factor, which has not been previously mentioned, is the competition that a local fertilizer plant might encounter from existing suppliers with plants located in the nearby Maritime provinces. It was shown that, to operate successfully, in view of the relatively small quantities of fertilizer used in Newfoundland, the local plant would have to capture all or nearly all of the Newfoundland market. With a plant located in the St. John's area, a local company would, in all probability, succeed in capturing the Avalon Peninsula and East Coast markets, but, in the West and South Coast regions, might not be competitive with mainland plants. In view of the importance of cheaper fertilizer and its greater use a case for inland freight subsidy might well be established.

SEAWEED RESOURCES OF NEWFOUNDLAND

BY DR. H. J. HUMM,

Duke University, Marine Laboratory, Beaufort, N.C.

The Industrial Development Board of Newfoundland has been interested for a number of years in taking steps to encourage greater utilization of Newfoundland's seaweed resources, especially the establishment of an industry to produce phycocolloids. In the furtherance of this goal, the writer was invited to make a survey, during August, 1948, of a portion of the coastal waters in order to locate the principal seaweed beds of economic importance and to estimate the relative abundance. Although first consideration was given "Irish moss" (*Chondrus crispus*), other seaweeds of possible economic value were watched for and recorded. Every facility needed for the work was provided so that time was the only limiting factor. The following is a report of the results of the survey.

The rocky nature of the coast, as well as the geographical location of Newfoundland are favourable factors for the growth of an abundance of brown algae, especially kelps and rockweeds. Brown algae are characteristic of cold water. The red algae, on the other hand, are more abundant in warm waters. Irish moss and a few other species serve as exceptions. Certain areas of Newfoundland coast were known to produce a considerable quantity of Irish moss as a result of commercial harvesting efforts that were begun in 1941, indicated by the data in Table 1.

Table 1

Quantities of Irish moss harvested in Newfoundland, 1941-43, the only years moss was gathered.

Year	Pounds
1941	28,795
1942	15,506
1943	11,534

While observations were being made on Irish moss, samples of several other species of red algae were collected and dried, including *Plumaria plumosa*, *Rhodymenia palmata* (dulse), *Ahnfeltia plicata*, and *Halosaccion sp.* These will be tested as time permits.

The two phyla of algae, Phaeophyta (brown) and Rhodophyta (red) produce phycocolloids of two general types. From the brown algae is obtained algin in its various forms (alginic acid, sodium alginate, and other metallic alginates). Algin is a complex carbohydrate known chemically as a polyuronic acid. It occurs in the plant as a cell wall constituent in the insoluble alginic acid form. It is extracted by treating the dried and chopped seaweed with a dilute solution of sodium carbonate. In the presence of sodium carbonate, alginic acid forms sodium alginate and goes into colloidal solution in the water. After extraction is completed, the solution of alginate is separated from the seaweed residue by filtration, precipitated with a mineral acid, and dried. In pure form it is an odorless and tasteless white powder, a small portion of which (1.0 percent), in water forms a viscous solution. It is used primarily as a thickener, emulsifier suspending agent, and stabilizer. When evaporated to relatively high concentration, alginates form a gelatinous semi-solid. However, they do not change from liquid to gel phase, and vice versa, with change of temperature, as is characteristic of agar and agar-lime extractives of the red algae such as Irish moss gel (an agaroid).

The extractives obtained from the red algae are characterized by the property of changing from liquid to gel state as a hot solution is cooled. Chemically they also are complex carbonhydrates. When changed to simpler form, most of them yield the sugar, galactose. Extractives of the red algae vary in their digestibility by man and the higher animals. Agar, probably the most complex in chemical structure, is only slightly digested or not at all. Digestion of agar or agaroids by domestic animals depends upon the presence in the animal's digestive system of bacteria capable of hydrolyzing agar or agaroids. Such bacteria are probably present in hay-eating animals. The extent of digestion of phycocolloids other than agar still remains to be determined, as well as the proportion of seaweed meal that could be utilized by live stock feed compounds.

In addition to the uses of seaweeds that are generally known, many other possibilities are yet to be investigated. For example, a seaweed from the West Indies that contains agar has been found to contain also a powerful vermifuge principle. This work is still in progress. Seaweeds of the Atlantic coast have not been studied for the drugs they may contain. Seaweeds may prove to be a source of anti-biotics, such as penicillin and streptomycin, since the mode of life of seaweeds strongly indicates that anti-biotic substances may serve to protect them from bacterial attack. Many seaweeds have been found to be high in vitamin content.

Methods

Any survey of economic seaweeds that includes a large area and for which time is limited involves the application of a sampling method on which to base estimates of density and extent of seaweed beds. The sampling method selected must take into consideration the species of interest and nature of the habitat, including such factors as clarity

of the water, type of bottom, and harvesting procedures to be used.

Time and weather conditions were the only limiting factors in the survey reported here. The principal problem was to decide how much coastline could be covered with reasonably reliable results in the scant month available.

The shore lines and islands of St. Mary's, Placentia, and Notre Dame Bays were surveyed by means of a cabin cruiser. Shore lines were examined in a general way from the motor boat and whenever a place was seen that appeared to offer a suitable substream for growth of Irish moss, a close inspection was made from a dinghy, using a glass-bottomed bucket.

In the relatively clear waters of Newfoundland, the glass-bottomed bucket permitted recognition of Irish moss at depths to 15 or 20 feet. Since there is as yet no known method for obtaining Irish moss from the beds at depths greater than about 12 feet at low tide, it was felt that the means necessary to locate beds in deeper water, if any, were not justified.

The eastern shore of the Avalon Peninsula from Witless Bay to Trepassy; the cape shore from New Harbour north to Grate's Cove and south to Holyrood; the western shore from Placentia to St. Bride's; and the Burin Peninsula were covered by car. Seaweed drift lines were studied and fishermen were consulted repeatedly. Wherever there was good evidence of Irish moss, a dory was borrowed, if available, and the bottom examined along the shore with the glass-bottomed bucket.

In general, survey by car was not satisfactory although more ground was covered in a given time. In many places where a close check was desirable, a boat was not available.

Due consideration was given the possibility of locating seaweed beds from the air. Along the New England coast

of the United States where Irish moss is sometimes found in about three fathoms of water, this expedient might be useful, since water transparency is too low to permit location of the seaweed from the water surface. Positive identification of the seaweed in a bed thus located would have to be made by obtaining a dredged sample or by means of a diving suit. In Newfoundland, however, there is no evidence that beds of Irish moss occur in such a habitat so that use of an airplane in connection with the survey did not seem practicable. In a survey for kelp, however, a plane would be very useful in Newfoundland. However, an excellent preliminary survey of kelp beds was done in the fall of 1939 by the Newfoundland Rangers.

Whether or not Irish moss is sufficiently abundant in Newfoundland to support an industry will be determined ultimately only by the success or failure of harvesting efforts.

Summary of localities where Irish moss was found in possible commercial abundance:

- St. Mary's Bay: Colinet Harbour (especially along beach between John's Pond and North Harbour)
Dog Cove
Big Barachois
St. Mary's Harbour
- Placentia Bay: Placentia Sound
(Argentia Bay—probably here also, although this was not checked)
Ship Harbour
Irishtown
Magotty Cove
Marystown
- Eastern Shore of
Avalon Pen.: Portugal Cove South
Trepassey

Western Shore of

Conception Bay: Harbour Grace
Spaniard's Bay (?)

Notre Dame Bay: Big Cove in Little Burnt Bay (?)

DISCUSSION

Newfoundland's seaweed resources of importance are the brown algae, the kelps and rockweeds. Probably the cost of raw material of these seaweeds would be lower in Newfoundland than anywhere else along the Atlantic coast of North America. Their abundance is virtually unlimited.

The uses of the various alginates are constantly expanding. In addition, other products, such as the alcohol mannitol and ingredients for stock feeds, can also be produced.

The abundance of Irish moss in Newfoundland appears to be sufficient to warrant its commercial utilization, but not of such magnitude as to provide a factory with all its raw material requirements. It may prove feasible to import supplementary Irish moss raw material from Prince Edward Island and Nova Scotia, since the cost of transportation would be less than to the States.

Raw material for an algin industry might be obtained from driftweed alone by gathering a full year's supply during the few months when it comes ashore in greatest abundance. It is important that driftweed be spread out to dry soon after it washes ashore. In cold weather slow drying is not harmful after the seaweed has been spread. If certain kinds of raw material are desired, rockweeds and kelps can be harvested, probably by mechanical means, in quantity in the Notre Dame Bay area and in other places indicated by the Newfoundland Ranger survey of 1939, a summary of which is included here as an appendix.

In Newfoundland the growth of Irish moss seems to be favoured by the presence of small amounts of fresh water. This is probably not because the moss prefers a salinity lower than that of the open sea but rather that fresh water brings with it a supply of nutrient salts (nitrates and phosphates in particular) that have been leached from the land. Irish moss is one of those seaweeds that is benefited by an increase in the concentration of these salts over that normally found in sea water. These observations are borne out by the abundance of moss in Gander Bay, Marystown, Trepassey Bay and other places. Placentia Sound appears to be an exception, but the source of nutrient salts may have been overlooked here.

If the above assumption is correct, then the following localities offer good possibilities: Indian Bay, (little) Trinity Bay, Lockers Bay, Freshwater Bay, Clode Sound, and others.

The relative richness of the waters of the Gulf of St. Lawrence in nutrient salts may explain the abundance of Irish moss found at Prince Edward Island and parts of Nova Scotia. These areas are far enough from the mouth of the St. Lawrence to escape the low salinities but the surrounding waters have been enriched by the river.

SUMMARY AND CONCLUSION

1. At the invitation of the Newfoundland Industrial Development Board, a survey was made during August, 1949, for the purpose of locating and estimating the abundance of Irish moss (*Chondrus crispus*) and other seaweeds of possible economic value in Newfoundland waters. The survey covered the greater part of the coast of the Avalon Peninsula, the Burin Peninsula, and Notre Dame Bay. Time did not permit the study of other promising areas.

2. It is believed that Irish moss occurs in Newfoundland in sufficient abundance to justify its commercial

utilization, but not in sufficient quantity to keep a factory in operation the year around.

3. The really important seaweed resources of Newfoundland are the brown algae, especially the kelps and rockweeds, from which algin and other products can be made.

4. The principal resources of Irish moss seen on this survey are in Colinet Harbour, Placentia Sound, Ship Harbour (Placentia Bay), Sound Island, Marystown, Tre-passey Bay, and Gander Bay.

5. The growth of Irish moss in Newfoundland appears to be related to the presence of a small amount of fresh water which brings with it nutrient salts leached from the land.

PEARL ESSENCE

Pearl Essence or Fish Scale Essence

The first successful effort to imitate pearls closely was made a century and a half ago by a Frenchman in Paris. He discovered that the silvery material so common on the scales of fish, when applied to beads, gave them a luster closely resembling that of pearls.

Pearl making continued almost entirely a Parisian industry until the outbreak of the First Great World War, when a demand sprung up for an American source of pearl essence.

There are, of course, many species of fish in North American waters whose skin is silvery with guanine crystals, and it was not long before pearl essence was being manufactured from scales of herring, alewives, shad, and other kinds of fish. To-day other concerns are manufacturing the essence, and a few are manufacturing pearls.

The lustrous substance is a deposit of thin bladelike crystals of pure guanine in the epidermis of fish. When this epidermis is scraped off fish scales, under water, it is partially disintegrated and the lustrous particles are suspended. These particles are then digested by acids.

The principal sources of American pearl essence are sardine herring at Eastport, Maine, where there are two or more factories operating on scales obtained from the sardine canneries. Other factories have been established in Massachusetts, Virginia, and New Brunswick. Scales that accumulate in the bottoms of the fishing boats are collected and sent to the factories, as well as those that are removed by special machinery in the herring factories.

In addition to the manufacture of pearls, pearl essence is used to-day for many purposes, such as the coating of jewellery, in the manufacture of luminous paints and lacquers, and in certain plastics.

The Newfoundland Industrial Development Board made several attempts to get someone interested in establishing a pearl essence plant in Newfoundland but without success due mainly to the shortness of the season for herring catching.

One experiment was made in shipping scales preserved in chemicals to a United States factory, but this proved much too costly.

It is the Board's considered opinion, however, that a pearl essence plant, working in conjunction with some large producer of herring products, would have definite possibilities.

THE HYDROGENATION OF ANIMAL AND VEGETABLE OILS AND ITS POSSIBLE APPLICATION IN NEWFOUNDLAND

Hydrogenation of animal and vegetable oils is employed on a large scale throughout the world. By this process liquid oils can be converted to solids, and soft fats rendered more or less hard with accompanying increased resistance to deterioration and improvement in odour. It has made possible a wide interchangeability of raw materials in the production of margarine, shortening, soaps, and other products made from fatty materials.

The process consists of interacting a refined fat or oil (e.g. free from free fatty acids, gums, soaps, water, etc.) with gaseous hydrogen in the presence of a nickel catalyst. The hydrogen is absorbed and the properties of the oil undergo the above-mentioned changes. The temperature of the oil may be regulated by means of steam and water coils and the reaction takes place under a slight pressure. Control over factors such as the catalyst, reaction time, agitation, temperature, pressure, and characteristics of raw materials is necessary so as to govern the extent to which the hydrogen is absorbed and the resultant properties of the product. Both the oil entering the process and the hydrogenated product undergo additional treatment to ensure good colour and freedom from odour. This may include treatment with alkali, decolourization with clay, and steam distillation under reduced pressure. The hydrogen should be produced at or near the plant site since it is not economical to transport the gas in cylinders.

Apart from the usual marketing considerations hydrogenation of fats involves three distinct problems. First—

a supply of suitable fats or oils, secondly, the production of hydrogen of a suitable purity and thirdly, the economics and technique of hydrogenation.

A. *The Oils*

As shown in Table I, Newfoundland exports substantial quantities of whale, seal, herring and cod oils.

TABLE I
Exports of Marine Oils

Cod, Common:

	1938	1947	1948
Gallons	687,927	595,666	252,942
\$ Value	228,881	1,015,595	436,074

Cod (Poultry Feed)

Gallons	72,899	4,694	9,733
\$ Value	42,167	11,680	18,930

Herring:

Gallons	245,590	35,249	127,132
\$ Value	62,606	61,703	197,370

Seal:

Gallons	535,140	415,206	208,413
\$ Value	140,192	761,207	436,030

Whale:

Gallons	6,400	1,012,492	686,659
\$ Value	2,160	1,694,094	1,178,042

All these oils can be hydrogenated to form solid fats. Possible end products can be divided into two classes:

(a) Those suitable for use in food products, e.g. margarine and shortenings.

(b) Those suitable for the manufacture of soaps and other inedible products.

Those which can be used for food command higher prices. They are, however, either more critical of the quality of the raw material or require more processing, and must conform to the requirements of the pure food laws.

Large quantities of hydrogenated marine mammal oils are used in the manufacture of margarine and to a lesser extent in the manufacture of soap. Fish oils are not usually associated with margarine but can be hydrogenated and blended with other oils and fats to make soap. They are also sometimes used as raw material for the production of commercial "stearic acids."

Margarine is essentially a finely dispersed emulsion of edible fats, pasteurized milk* and water. To these ingredients minor amounts of butter, salt, synthetic flavours, vitamins, preservatives and colouring agents may be added to more closely simulate ordinary butter. For the same reason the added milk is often slightly "soured" under controlled conditions. The characteristics of the fat largely govern the melting point and "feel" of the finished product. The fats originally used often consisted of mixtures of rendered beef, mutton and hog fats (oleo, oleo-stearine and lard) blended to obtain the correct consistency, but increased demand and the development of the hydrogenation process permitted the use of whale, cottonseed, soybean oils, etc. as excellent replacements. The process can be regulated so that a single fat can be hydrogenated to the required consistency. Table II shows comparative prices and chemical characteristics of various oils, some of which are of interest to the margarine manufacturer.

* Evaporated milk powders are widely used in Europe.

INSERT TABLE II

APPROXIMATE PRICE AND CHEMICAL CHARACTERISTICS OF SOME FATS AND OILS

Name of Fat	A Recent Price: c./lb.	Approx. Melting Point °C	Iodine Value	Saponification Value	Free Fatty Acid %
Oleo extra; drums f.o.b New York	19-1/2	33	46	193	0.2
Oleo stearine; bbls. f.o.b New York	17	50	25	193	2.2
Lard; extra, winter strained in drums, f.o.b New York	22	36	65	198	0.3
Whale Oil; ref. natural drums, f.o.b New York	—	—	120	180	—
Seal Oil; 2% acid drums, f.o.b New York	16*	—	130	185	—
Cod Oil; Newfoundland drums, f.o.b New York	10	—	155	190	—
Herring Oil; drums f.o.b. New York	—	—	140	190	—
Cottonseed Oil; crude in tank cars f.o.b southeast U.S.	17-3/4	—	—	—	1.5
Cottonseed Oil; refined tank cars f.o.b New York .	22	—	110	193	0.2

Soybean Oil; crude tank cars f.o.b mills	14-1/2	—	138	192	1.0
Soybean Oil; refined tank cars, f.o.b New York	19	—	—	—	0.2
Coconut Oil; crude, tank car, f.o.b. Atlantic ports	23**	—	10	253	3.0

Prices and chemical characteristics of fatty materials vary widely with supply and demand and with specific source, season, and processing so that the values given above must be accepted with reserve. Prices were obtained in September when the general level was high.

* February 6th. 1950 inclusive, duty and processing tax.

** Including duty and processing tax.

Hydrogenation has resulted in many of these oils being interchangeable. Control of the process is such that consistency of physical properties, taste and stability of the margarines made from them are superior to margarines made from the natural fats. There has accordingly been a decided tendency to use ever increasing quantities of hydrogenated whale oil, peanut oil and soybean oil in Europe, and cottonseed and soybean oils in the United States.

The choice of fats for the manufacture of soaps is only indirectly dependent upon the consistency and melting point. The actual chemical characteristics are more important. A fat derived from a saturated fatty acid containing 14 carbon atoms (myristic) provides a good balance between various opposing factors. In practice no fat is available with a high percentage of this compound so that commercial practice employs mixtures of fats approximating this as an average. Hydrogenated marine animal oils and in some cases hydrogenated fish oils are useful additions to the soapmakers' reserve of available materials, and substantial quantities are used by them, both for the manufacture of soap and for the production of other detergents.

Hydrogenation and other refining techniques have been so developed in recent years that it is imprudent to draw a line between what can or what cannot be made from a given raw oil. Economics rather than technical considerations are apt to be the determining factor.

B. The Supply of Hydrogen

There are several commercial ways of producing hydrogen, e.g.: (a) electrolysis of water; (b) reaction between iron and steam; (c) hydrocarbon reforming; (d) reaction between water gas and steam. Hydrogen can also be obtained as a by-product in the electrolytic manufacture of caustic soda.

We doubt whether processes C and D would be applicable to the Newfoundland economy. Both processes are dependent upon large scale operation and secure and reasonably priced supplies of natural gas, propane or coke.

The electrolytic method is simple but relatively expensive. It is used principally in areas where there is low cost electric power. Assuming production of about 10,000 lbs. per day of hydrogenated oil, the daily hydrogen requirement would be in the order of 15,000 cubic feet with a power consumption of about 2000 k.w.h. (D.C.). The cost might be in the order of one cent per lb. of hydrogenated fat. One type of electrolytic cell has a capacity of about 500 cubic feet of hydrogen per day and operates at 1250 amps. For every two cubic feet of hydrogen there is also obtained one cubic foot of oxygen. If a market exists for the oxygen this may be a deciding factor in the choice of process.

The iron and steam process is widely used in capacities of 2500 cubic feet per hour or more. A supply of water gas is also essential to periodically reactivate the iron so that cheap coke and proximity to an existing water gas plant are an advantage. The hydrogen requires purification but efficient means are available for this purpose. An important item of expense in the operation of this process is the cost of the water gas. About 1700 cubic feet are consumed for every 1000 cubic feet of hydrogen. The production of this amount of gas requires about 50 lbs. of coke.

In the "hydrocarbon reforming" and "water gas-steam" processes, steam is reacted in the one case with either natural gas or propane and in the other with coke. In both cases the resultant mixture of hydrogen, carbon monoxide, etc. is reacted with more steam to produce additional hydrogen and convert the carbon monoxide to carbon dioxide which, together with other impurities, can readily be removed from the hydrogen.

C. Economics and Technique of Hydrogenation

The technical aspects of the hydrogenation of fats cover such a wide field that any discussion beyond the brief description of the process already given would be out of place in this summary. Location of a plant in Newfoundland would have the advantage of proximity to a source of supply of the oils. This is an important factor from the point of view of both quantity and quality. The location appears satisfactory with regard to supplies of other solid and liquid raw materials since the quantities involved are not large and shipment by water should be practical. Hydrogen can probably be produced more cheaply at other locations but such differences are not likely to be large when calculated on the basis of the value of the finished product.

Recent study of prices of fatty materials at various quality levels indicates that the value of crude oils is increased between four and five cents per pound by refining. Hydrogenation further increases the value of the product as packed in drums by about seven cents per pound. Price differences will naturally vary with quality and supply and demand. They therefore deserve detailed study in relation to any specific project.

Technically, although the principles of both processes are simple, their practical application in a competitive market involves expert plant operation and modern equipment. Management and know-how are therefore important.

Markets, Capital Requirements and Production Costs

The economics of a hydrogenation plant involve the available markets and the supply of raw materials. The size of the market must be balanced against the fat supply. Justification for the investment is also largely dependent upon size of the market. Cost of hydrogen and

choice of process for making it are dependent upon cost of fuel or electricity and the size of the plant.

For the purpose of preliminary calculations we have roughly estimated the Newfoundland market for edible fats and oils to be about 6,000,000 lbs. per year. With this in mind it was assumed that a plant located in Newfoundland could sell about 2,000,000 lbs. per year of hydrogenated oils within the province as margarine and shortening. It would seem reasonable to anticipate that a further 1,000,000 lbs. could be sold in markets outside the province. On this basis a plant capable of producing 10,000 lbs. per day (e.g. about 3,000,000 lbs. per year) would be required.

A very rough estimate of capital requirements for a plant of this size is in the order of \$300,000. Assuming this capital cost and overhead and depreciation at 15%, we would expect production costs to be about 7c per lb. of hydrogenated oil packed in drums. The price spread between raw oils and the hydrogenated product varies but a figure of 11c. per lb. is probably an average differential. About 4c. per lb. is therefore left to cover profit and selling expense. Additional revenue might be forthcoming from the sale of oxygen and waste product soaps.

Sale of hydrogenated fats outside of Newfoundland presents problems that require careful study and liaison with prospective users. Many of the larger users of raw fats and oils have their own hydrogenation plants. From a limited number of raw materials they can produce a variety of products in quantities that are co-ordinated with markets that vary with local conditions. For this reason only the smaller producers of margarine, etc., rely on purchased hydrogenated oils to fulfill their requirements. Shipment to such customers will require careful study of transportation, pure food laws, tariffs, and the competitive situation as regards both the hydrogenated and raw oils.

Availability of hydrogenated oil would also assist soap manufacture. The possibility of expanding this industry if hydrogenated oils were available requires further study of the markets and costs of manufacture.

CONCLUSIONS

It is impossible to arrive at a definite conclusion as to the possibility of establishing a successful hydrogenation industry in Newfoundland without a detailed market survey. The principal factors will be the market for margarine and shortening with their requirements for hydrogenated oil. If soap manufacture can be included, the market for the products would be enlarged. Cost of hydrogen produced by the electrolytic method would be considerably lower if a market for the oxygen produced at the same time could be found. The market for oxygen might thus affect the overall costs.

If the market survey indicated possible sales of about 3,000,000 lbs. per year or more, a more detailed study of capital requirements and production costs would be justified.

CONTRIBUTORS

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Ayre & Sons, Ltd.,
Bank of Montreal,
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Bowring Brothers, Ltd.,
Brookfield Ice Cream Ltd.,
Buchans Mining Co., Ltd.,
Canadian Bank of Commerce
Canadian Industries, Ltd.,
Canadian Liquid Air Co., Ltd.,
Canada Packers, Ltd.,
Cornell, Macgillivray, Ltd.,
Crane, Ltd.,
Crosbie & Co., Ltd.,
Chester Dawe, Ltd.,
Dominion Steel & Coal Co., Ltd.,
G. S. Doyle, Ltd.,
Fishery Products, Ltd.,
Furness, Withy & Co., Ltd.,
Horwood Lumber Co., Ltd.,

Imperial Oil, Ltd.,
Job Brothers & Co., Ltd.,
William J. Lundrigan, Ltd.,
Marine Agencies, Ltd.,
Marine Oils, Ltd.,
Newfoundland Butter Co., Ltd.,
Newfoundland Light & Power Co., Ltd.,
Newfoundland Tractor & Equipment Co., Ltd.,
F. M. O'Leary, Ltd.,
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